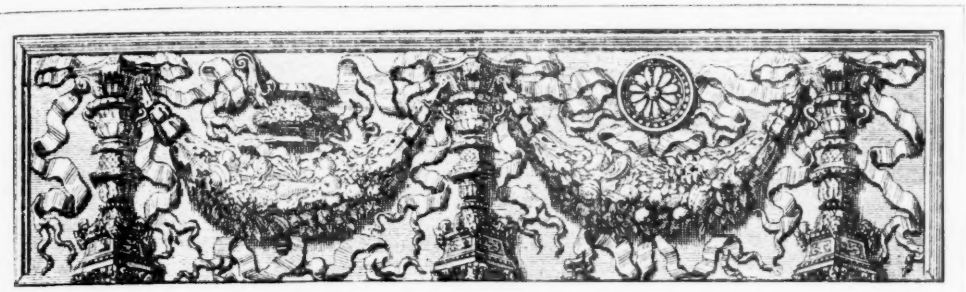


COVENTRY PATMORE.

THERE are many reasons why the author of *The Angel in the House* should be had in remembrance of architects. Perhaps the sisterhood of the arts, and the duty in architects of sympathy with fellow-labourers, are in themselves sufficient excuse for the inclusion in our Journal of a few words on a great poet; but Coventry Patmore and his complex life have closer links with the men of our craft than need be sought in the sometimes hypothetical universality of an architect's intellectual sympathies.

At first sight the most architectural feature of the recently-published biography * would appear to be that it owes its authorship to Mr. Basil Champneys, whose double success as a writer and designer gives pleasant disproof to the unwholesome theory that one must not expect good prose and good architecture from the same hand. Indeed we may take credit to our art that so excellent a piece of work has been effected by a brother artist.

Biography, I am told, is no more any fool's job than is architecture, and the particular kind of biography to which Mr. Champneys has laid his hand, and which he has so happily carried through, is of the most difficult sort. The very causes that make the life of a man of letters apparently easier to compile than that of a man of art or action are but the pitfalls that beset his biographer. Patmore, to add to the difficulties, was more than a man of letters, and there is scarcely an aspect of his complicated nature in which unhappy handling would not have meant failure. A gift of "touch" or, as they sometimes call it, "tact" has saved Mr. Champneys from these dangers. He knew his subject intimately in each of his walks of life, and felt for his friend that admiration which is an essential in friendship; yet the biography is as free from the bias which wrecks a reader's confidence as from the insipidity which devitalises a record in which there is no enthusiasm.

I perhaps cannot praise the work better than by a little blame. Mr. Champneys has kept himself too much in the background. His all too few pages of directly personal memoir are by no means the least interesting part of the book. We could, in fact, have done with more of the biographer.

There are folk who have never heard of Patmore; there are many who have heard of him and never read him, and not a few to whom his name means nothing more than the occasion for a smile. Some even among his readers laugh openly at the great, wholesome, and simply-worded poem which will always remain his greatest work. They see the simplicity, ignore the wholesomeness, and miss the greatness. This is quite understandable. There are people who think little of the Apocalypse.

But, to come back to our own subject. Even Patmore's poetry is not without its tinge of

* *Memoirs and Correspondence of Coventry Patmore.* By Basil Champneys. London: George Bell & Sons, 1900.

architecture. The setting of *The Angel in the House*, which has for its scene Salisbury Close, is none the less real for being presented in the fewest words. Such an occasional couplet as

> Red brick and ashlar long and low
> With dormers and with oriels lit,

is all that occurs in the way of direct description, but the cathedral precincts make themselves undeniably felt as a presence in the poem.

But, though I own to a hearty admiration—of twenty years' standing—for Patmore the poet, it is of Patmore the critic of architecture that I ought particularly to speak here.

It is seldom that a writer of general culture (other than an architect) approaches the theme of architecture with any utterance but vague generality. With Patmore it was otherwise. Very early in his career as a writer, he felt it to be his pleasure and his mission to write upon this subject, and the essays which he contributed before 1860 to the *Edinburgh Review* and other publications showed that he had allowed study to precede the formation of opinion. The results achieved in these early essays have been for the most part gathered together for republication in the volume bearing the title *Principle in Art*, the last essay in which is an important paper on the principal architectural styles. I have read this paper through more than once, and though the last reading like the first produced a certain disappointment, due chiefly to a particular shortcoming, there cannot, I feel, be denied to the author a tribute for the clearness of his critical insight on the value of the elements of design.

The shortcoming that disappoints one is the neglect of the Renaissance. I confess I do not understand how a lover of beauty, whose taste is wide enough to embrace both Greek and Gothic art, can fail to recognise art in the work of the Italian revival. "Italy, the country of the arts," he writes, "never had an architecture."

This is a bold saying, and possibly truthless, remarkable, too, for its place in the history of Patmore's opinions. He went to Italy in 1864, and writing from there acknowledged in more than one of his most readable letters that he had been mistaken in ignoring the work of the sixteenth century. "Genoa," he writes, "is magnificent beyond anything I had expected. I had no notion before of the power of the Cinque Cento architecture on its own soil. . . . I was wrong in making up my mind on this and other architectural points on theory and without seeing the buildings." Many of his former views and prejudices were indeed confirmed. He passes in Rome "a circular edifice of brick with a mean façade" to discover afterwards that it was the Pantheon. He stands within the claws of Bernini's portico, and inquires ironically where is St. Peter's. Yet he has to exclaim "the Lombard 'Duomo' has more than reconciled me to the Italian mode of building in alternate courses of differently coloured marbles," and, again, "I quite distrusted what I had heard of the beauty of some places which have much exceeded my hopes."

Still, when in old age he regathers his architectural writings into a comprehensive form, we find the recantation recanted by omission. He goes back to his former position without so much as a Ruskin-like footnote to say, "I thought this once, but I have changed my mind since."

Patmore's essays should, I think, be read. The views expressed in them are, perhaps, no nearer truth than such applications of canon to architecture are wont to be, but they lead the mind to think on the possible meaning of small things, and of the reasons which may sometimes underlie the apparently unreasonable elements in art. Do but study his notes on the component parts of the Doric order; his analysis of Egyptian architecture (in which its pyramidal *motif* is cleverly insisted on); or his reasoning upon that eternal theme of all legitimate structural design– gravitation and its counteraction—and it will become apparent

that in Patmore our art, as well as other arts, has lost a prophet and philosopher. Sometimes he disappoints by brevity or by a kind of holding back upon the verge of utterance. He approaches, for example, but does not arrive at the apparently sound doctrine concerning sculptured ornament that it should exist only upon such members as are without share in concentrated structural pressure, or at least only on such parts of structural members as are obviously free of special stress. It is in accordance with this law that the best styles avoid the enrichment of the shafts of columns, and while encouraging sculpture on a frieze are sparing in its use on an architrave. The blossoming-out of capitals is no infringement of the rule. The foliage at the summit of a Corinthian or Gothic shaft stands for a kind of testimony that the pier having done its duty from the base upwards in sufficiency of strength, is free at its head to show a symbol of rest—the resultant of a margin of energy.

Not wholly can we agree with Patmore's conclusions, nor even with his propositions, but that, after all, in a writer of this class, is of little consequence. The syllogism is, for the art critic, rather a vehicle of thought than an engine of persuasion. In other words, the study of these matters is but a long Induction. The Deductions, when they are attempted, are but trial flights by which we may test in some small region of art's atmosphere the wings of theory which the critics weave.

Not that Patmore was unsuccessful in his generalities. Here are examples:—

"All artistic production involves a large element of lucky accident; of which the true artist alone knows how to avail himself."

"As sound philosophy is only sound sense spread out, so true criticism of great work is only right perception spread out."

Again, speaking of the walling of a Greek temple, and in conflict with Ruskin, who had said that "in the Greek temple the wall is as nothing," he writes, "the wall is the expression of the passive life that becomes active when it is concentrated in the colonnade."

And yet again, "a modest ostentation of extreme substantiality is an element of architectural effect."

For the modern intentional imitation of what in ancient work was accidental, he had no manner of sympathy. One of his best essays is that on "Old English Architecture, Ancient and Modern," wherein he condemns with force and humour the reproduction in an overgrown villa of the eccentricities of plan and irregularities of outline which come to an old house by the additions of succeeding generations. "Surely," he concludes, "if the devil were an architect, his favourite sin would be this kind of cottage of gentility."

I hope I have not written as if there were whole volumes of architectural philosophy from the pen of this dead thinker; there are, indeed, but a few pages. But those pages are so replete with grave thought and gay, and the allusions in his correspondence and life to architecture and its conditions were so deep and so true, that one is forced to realise in him one of the very few minds who, without any professional connection with our art, yet see and can express something more than the surface of its mysteries.

PAUL WATERHOUSE.

THE HIGHER EDUCATION OF ARCHITECTS.

By Arthur Cates [*F.*].

III. THE DEPARTMENT OF ARCHITECTURE, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, BOSTON, U.S.A.

ESTABLISHED so recently as 1865, the Massachusetts Institute of Technology has from small beginnings made such vast strides onward, and has developed technical teaching in so admirable a manner, that it now takes a foremost place in the ranks of such institutes, and is an excellent example of what they should be, when it is desired to encourage and cultivate earnest, continuous, and systematic study, rather than the somewhat amateurish and superficial methods which characterise some of the recently founded Polytechnics in this country.

Organised strictly as a technical institute, on lines similar to those of the great Technical High School of Charlottenburg by Berlin, which has recently celebrated its centenary—and of which, so far as regards its teaching of architecture, a full account will appear in this series—it occupies an entirely different position from Columbia and Cornell Universities, which have already been described, and from Harvard University located at Cambridge (practically a suburb of Boston), which will also be described here; and apparently being primarily intended for a class of students whose preliminary education may not have been so far advanced as that of those entering the University courses, the first year's course is devoted to the organisation and consolidation of that general knowledge essential to be attained before the strictly technical studies can be entered upon: but for admission to this the applicant must have attained the age of seventeen years, and must have passed satisfactory examinations in Algebra, Plane Geometry, Solid Geometry, French or German, English, and History, and also present satisfactory evidence of preparation in one other selected subject. To be admitted as a regular student in the second, third, or fourth year, the applicant must have attained the corresponding age (eighteen, nineteen, or twenty years respectively), and must in general pass satisfactorily examinations in all of the subjects given in the earlier years of the course.

Originated by a Legislative Act of the State passed 10th April 1861, the Civil War led to the postponement of the opening of "The School of Industrial Science" until 1865, when fifteen students attended.

The Institute now offers thirteen distinct courses of instruction, viz.: I. Civil Engineering; II. Mechanical Engineering; III. Mining Engineering and Metallurgy; IV. Architecture; V. Chemistry; VI. Electrical Engineering; VII. Biology; VIII. Physics; IX. General Studies; X. Chemical Engineering; XI. Sanitary Engineering; XII. Geology; XIII. Naval Architecture. For the satisfactory completion of the four years' course in any one of these, the degree of Bachelor of Science is conferred by the Institute.

The roll of students for 1900 shows 882 taking the full courses, 296 special, being a total of 1,178 students, for whose instruction there is a staff of 24 professors and 148 assistants—172 teachers in all.

The capital fund invested in real estate, stocks and shares totals up to $3,119,588, equal to, say, £623,918, besides which large sums have been expended in buildings, plant, fittings, and in aid of income. This great fund has been accumulated from State grants of lands and liberal benefactions by private persons, which are yearly added to, as recently by the gift of Mr. Pierce, $750,000 (£150,000); that of Mrs. Jonner, $140,500 (£28,000; of Mrs. Dickinson, $40,000 (£8,000), and others of very substantial but smaller amounts. The number of ladies who so contribute to this, as to other educational institutions, is remarkable.

An income of nearly £5,000 a year is available to be applied for providing free, or partially free, tuition for deserving students, and important sums in addition can be used to aid the graduate work of advanced students and teachers.

The staff of the Department of Architecture consists of:

Professor Francis W. Chandler, Professor of Architecture; two associate or assistant professors, an instructor and a lady assistant (Alice G. Loring), a Professor of Architectural Design (Professor Desiré Despradelle), and two teachers or lecturers, a lecturer on the history of ornament, two instructors in drawing (freehand and pen-and-ink), and one in modelling—twelve in all; the necessary instruction in other essential subjects of the course, such as mathematics, pure and applied, physics, languages, geometry, business law, public health and sanitation, &c., being given by professors of other departments.

The number of regular students taking the full courses is now 53, and there are also 42 special students attending, making a total of 95 on the roll. The new studio, recently erected, provides 135 desks for students, but there is a space for

200, thus anticipating a steady increase in the class.

Women being admitted to all the courses in the Institute, there are now three lady students attending the course of architecture, and seven ladies have already graduated in that department.

The first graduate's degree was granted in 1873 to one only; the number did not increase above six annually till 1892, but 135 have passed in the last eight years, 22 degrees having been granted in 1899. In all 176 degrees have been granted, 7 of the recipients being ladies. It is understood that in the architectural schools throughout the States more than seventy students now graduate every year, a number rapidly increasing as the schools and colleges get into full work; and, moreover, the training gained by the large number who do not graduate, and by those who pass only through the two years' course, must be of great advantage to the profession.

The architectural course aims at preparing its members not only for their years of work as subordinates, when accuracy, rapidity, and taste in drawing and design, with knowledge of detail, will be the most useful qualifications, but also for their subsequent independent careers, when the value of technical knowledge will be most important.

The professional work of the course begins in the second year with the study of the Five Orders and their applications. The student is also made familiar with the materials and principles of construction by lectures and visits to buildings.

During the entire course there is regular instruction in freehand drawing, that of the last year being from life; facility in rendering is gained by a course in water-colour and pen-and-ink drawing.

For three years the students are continually engaged upon architectural design; each student's work is examined and criticised before the classes by a jury from the Boston Society of Architects.

Architectural history is taught by lectures, illustrated by the stereopticon, by text-books, and by written themes.

In the third year the time devoted to Architectural History is much increased, specifications are discussed, and sufficient instruction and practice in working drawings is given to enable the student to be of immediate service on entering an architect's office. A technical course in heating and ventilation is also given, illustrated by the study of important public buildings in the city.

In the fourth year applied mechanics and graphical statics are applied to general practice, and exercises are given in designing trusses and in the problems occurring in modern construction.

An option in Architectural Engineering is offered to students who intend to make a speciality of construction; there is also an option for the study of Landscape Architecture and Gardening; and advanced courses in design, history, and construction are offered to graduates of the regular course.

Special students in Architecture must be college graduates, or have attained twenty-one years of age with not less than two years' office experience. Before admission to the course they are required to pass examinations in plane and solid geometry, and freehand and mechanical drawing (including projections, isometric, and the elements of descriptive geometry), and must include in their work freehand drawing and descriptive geometry.

Course of Instruction in Architecture.

FIRST YEAR.

First Term: Algebra—Plane Trigonometry—General Chemistry—Chemical Laboratory—Mechanical Drawing—Freehand Drawing—French or German—Rhetoric and English Composition—Military Science.*

Second Term: Analytic Geometry—Theory of Equations—Mechanical Drawing and Descriptive Geometry—Freehand Drawing—French or German†—United States History—Military Science.

SECOND YEAR.

First Term: Elementary Design—Materials—Shades and Shadows—Freehand Drawing—Differential Calculus—Physics—Mechanics—Wave Motion—Electricity—German or French—English Literature—European History.

Second Term: Design—Perspective—Stereotomy—Freehand Drawing—Integral Calculus—Physics—Electricity—Optics—German or French—English Literature and Composition.

THIRD YEAR.

First Term: Design (10 *hours per week*)—Ancient and Romanesque Architecture—Specifications and Working Drawings—Freehand Drawing—Heating and Ventilation—General Statics—German or French—Political Economy.

Second Term: Gothic and Renaissance Architecture—Freehand Drawing—Pen-and-ink—Building Stones—Strength of Materials—German or French—Political Economy and Industrial History—Business Law; *with the option of* Design (14 *hours per week*) *or* Structures and Structural Design.

FOURTH YEAR.

First Term: History of Construction—European Civilisation and Art—Pen-and-ink; *with the option of* Design (19 *hours per week*)—Con-

* V. footnote, p. 43 *ante*.

† Students entering in French take German in their second and third years, and *vice versâ*; thus both languages are acquired.

structive Design—History of Ornament—Life Class—Water-colour—Strength of Materials—Colour and Acoustics; *or* Structures—Structural Design—Strength of Materials.

Second Term: Business Relations—European Civilisation and Art—Principles of Public Health and Sanitation—Thesis; *with the option of* Design (26 *hours per week*)—History of Ornament—Life Class—Modelling—Pen-and-ink—Water-colour; *or* Structures—Laboratory Tests of Building Materials.

The annual fee for tuition for the whole course is $200 (£40).

Thus the instruction comprises the study of construction and materials, the study of building processes, and of professional practice, of composition, design, and the history of architecture. It is arranged to meet the needs of those who are commencing their professional studies, as well as of experienced draughtsmen, who desire to make up deficiencies in their training, or to qualify themselves for undertaking the responsibilities of practice.

In addition to the general library of the Institute for works of ordinary reference, the Architectural Library contains nearly four thousand volumes of technical works, a carefully selected collection of eleven thousand photographs, six thousand lantern slides, and the leading American and foreign periodicals.

The chief part of the collection of casts of architectural sculpture and detail belonging to the department has been deposited in the Museum of Fine Arts, and arranged with the architectural collections belonging to that museum, to which the students have free access.

The studies are not limited to the university course; travelling students send measured drawings from Italy. Many graduates continue their studies abroad, a year of study and travel in Europe forming an excellent continuation of the course, especially when the studies are properly directed under scholarly supervision.

In the vacation there is a Summer School of Architecture, which since 1896 has pursued its studies abroad, making bicycle tours in Canada, England, France, and Italy, making measured and other drawings by the way, and freely using the camera for important details and buildings; and thus the whole year's course of study is completed.

9, Conduit Street, London, W., *8th Dec.* 1900.

CHRONICLE.

Proposed Alteration of the Steps of St. Martin's.

With reference to the question of the alteration of the steps of St. Martin's-in-the-Fields for the purpose of widening the thoroughfare at this point, the following letter requesting the opinion of the Royal Institute upon the matter was received from the London County Council on the 2nd November:—

To the Secretary of the Royal Institute of British Architects.

Sir,—The Council has recently had before it a proposal made by the Vestry of St. Martin's-in-the Fields for the widening of St. Martin's Place by the alteration of the steps in front of St. Martin's Church, a work towards the cost of which the Vestry have asked the Council to make a contribution.

The Vestry's proposal is shown upon the plan sent herewith, and is fully described in the enclosed report which the Improvements Committee recently submitted to the Council. The Council, upon taking the report into consideration, decided to refer the recommendation back to the Committee with instructions to take expert opinion as to the architectural effect of the proposed alteration, and to request the Vestry meanwhile to take no further action for carrying out the work. In compliance with this decision the Vestry have been asked to take no further action at present, and the Council's Improvements Committee, who have again had the subject before them, will be very glad if the Royal Institute of British Architects can see their way to give the Council the benefit of their views upon the Vestry's proposal.

I may add that during the debate in the Council several alternative suggestions were made, one being that the steps might be set back to a position within the line of the columns fronting the church, and another was to the effect that a vertical wall on the west side of the columns might be substituted for the steps in order to increase the width of the carriage-way and footway opposite the church.

I mention these suggestions, not because the

Council in any way decided to adopt them, but because the Committee are anxious to obtain the fullest advice of the Royal Institute upon the suggested alteration of the steps of the church. If there is any further information which your Institute may desire upon the subject I shall be happy to supply it upon your communicating with me.—I am, Sir, your obedient servant,

G. L. GOMME, *Clerk of the Council.*

The Report of the Improvements Committee referred to in the above letter read as follows:—

St. Martin's Place—Capital vote, £270.

The Vestry of St. Martin's-in-the-Fields have submitted to us a proposal for the widening of St. Martin's Place by the alteration of the steps in front of St. Martin's Church; and they have asked the Council to contribute part of the cost of the work. The steps have been in a dilapidated condition for some time, and owing to their condition and position are the cause of frequent accidents to pedestrians. The Vestry in 1896 asked the Council to undertake as a county improvement the reconstruction of the steps in such a way as to secure a widening of St. Martin's Place. The Council on 13th April 1897, upon our recommendation, informed the Vestry that it was not prepared to carry out the work as a county improvement. We have given careful consideration to the proposals now put forward by the Vestry. At the present time a flight of steps leads from the portico of the church to a terrace or landing. This landing is about 9 feet wide on the south side of the portico, and connects with the footway of Duncannon Street by another flight of steps. The landing on the west side of the portico is about 4 feet 6 inches wide, and connects with the footway of St. Martin's Place by a flight of steps which gradually tapers away as the footway rises to the level of the landing at its northern end. The footway between the lower flight of steps and the carriage-way is in some places less than 6 feet wide; and at this part the carriage-way of St. Martin's Place is only about 37 feet wide. The Vestry have agreed with the church authorities for the reconstruction of the steps in such a way as to remove the landing on the west side of the portico and to lessen the width of the landing on the south side. A continuous flight of steps will lead from the western front of the portico to the footway of St. Martin's Place, and the effect of the abolition of the landing will be to widen the footway to about 9 feet. In consideration of the Vestry undertaking the work, the church authorities will surrender without money payment the land to be added to the public way. We regret that it is not possible at the present moment to increase the width of the carriage-way; but any increase in the width of the thoroughfare at this part, whether carriage-way or footway, must be of great advantage to traffic generally. The vehicular and pedestrian traffic at this spot is enormous, and consists not of local traffic, but of that going to and from all parts of London. We see no other way of obtaining a widening opposite St. Martin's Church, as the National Gallery is on the other side of the road, and any alteration of that building is out of the question. Before approving the plan submitted by the Vestry, we considered alternative schemes, with a view to the Council concurring in the adoption of the most suitable scheme to widen St. Martin's Place without interfering in an undesirable way with such a prominent and well-known building. We came to the conclusion, however, that the Vestry's proposal was the most suitable, and likely to detract least from the architectural effect of the present arrangement of the steps. From contemporary prints it would appear that the lower flight of steps formed no part of the original design. When the Vestry made application to us in July last they stated that the cost of the proposed work was estimated at £608. They now inform us, however, that as accidents frequently occur they have felt compelled to undertake the work at once to secure its completion before the winter sets in, and that they have therefore entered into a contract amounting to £811 10*s.* 2*d.* We quite agree with the Vestry as to the urgency of the work, and we therefore approve of the action taken by them in the matter. We consider that the Council may reasonably contribute one-third, not exceeding £270, of the net cost of the scheme which the Vestry propose to adopt, and we recommend—

That the estimate of £270 submitted by the Finance Committee be approved, and that the Council do contribute, on the usual conditions, one-third of the net cost of the reconstruction by the Vestry of St. Martin's-in-the-Fields of the steps in front of St. Martin's Church in such a way as to increase the width of the footway on the eastern side of St. Martin's Place to about 9 feet, as shown upon the plan submitted by the Vestry on 14th July, 1900, such contribution not to exceed the sum of £270.

Referred back to the Committee.

The reply of the Council of the Royal Institute was made on the 13th November in the following terms:—

To the Clerk of the London County Council.

SIR,—With reference to your letter of the 2nd November, in which you convey to the Council of the Royal Institute of British Architects an invitation from the London County Council to express their views as to the Report of the Improvements Committee on the Vestry's proposed scheme for altering the steps of St. Martin's-in-the-Fields, I am instructed by my Council to reply as follows:—

The Council of the Royal Institute are strongly of opinion that the suggested removal of the landing, which now divides the flight of steps leading up to the portico, would be very detrimental to the appearance of the west front of this fine church. Owing to the fall in the ground from north to south, the lower steps are of necessity broken off where they merge in the ground line. An unsymmetrical base of this kind to a symmetrical portico would have a distinctly bad architectural effect, but by the ingenious device of dividing the flight of steps in the middle, a perfectly symmetrical base of seven unbroken steps is provided for the colonnade, while the lower steps, which must terminate unsymmetrically, are separated from the design of the building and do not form part of it. My Council feel therefore that nothing short of actual necessity could justify the removal of the landing or platform, while from the personal observation of its members and reliable information received, they are fully assured that no such necessity exists.

In the event of the widening of the public footpath ever becoming necessary, they have no doubt that the suggested setting back of the western steps is the least objectionable means of effecting the purpose. But even if on account of such necessity the landing be omitted from the steps in

front of the portico, they strongly recommend that it should still be retained on the south side, where it would be useful in helping to preserve somewhat of a symmetrical appearance to the base of the portico.

While considering the question of the appearance of this portico, my Council beg leave to suggest whether it would not be possible to remove the cast-iron railings now fixed at the top of the steps and between the columns, as they constitute a serious disfigurement to the building.

I am, Sir, your obedient servant,
W. J. Locke, *Secretary.*

The views of the Council of the Royal Institute as set forth in the above letter were quoted in full in the Report brought up by the Improvements Committee at the Meeting of the London Council on the 27th November. The Report, however, went on to state that

> After a full and careful review of all the facts, and having regard to the opinion expressed by the Royal Institute of British Architects, we have decided to advise the Council to contribute towards the cost of the work proposed to be undertaken by the Local Authority, subject to the Council of the City of Westminster agreeing to retain the platform in the steps on the southern side of the church. We are impressed by the fact that the great extent of the traffic along St. Martin's Place necessitates the widening of the thoroughfare, and we consider that the least objectionable method of providing for this is by adopting the proposal made by the Local Authority, subject, however, to the qualification in regard to the retention of the platform on the south side of the church. We are not prepared, however, to advise the Council to arrange for the removal of the cast-iron railings from the top of the steps, as suggested by the Royal Institute, because we consider such a course most undesirable, although we admit that architecturally they detract somewhat from the appearance of the building. . . . . .

The adoption of the recommendation of the Improvements Committee was moved by Colonel Probyn, Dr. Longstaff, the Chairman of the Committee, refusing to do so.

Colonel Probyn said that the ecclesiastical authorities had consented to give up the steps to be dealt with for the public benefit, and the Local Authority fully recognised the importance of the improvement. What was proposed was to do away with the "table-land" and to add 2 ft. to the public footway—a loss to the church of very slight account, but a considerable gain to the public.

Mr. Shaw Lefevre moved as an amendment that, in view of the report of the Royal Institute of British Architects, the Council was not prepared to take the responsibility of sanctioning the alteration by contributing any part of the cost.

Sir H. B. Poland, Q.C., seconded the amendment, and said that had the St. Martin's Vestry had before them the Report of the Royal Institute, they would never have sanctioned the alteration or entered into a contract for carrying it out. He felt that the iron railings at the top of the steps were an eyesore, and he could not think why, according to the Committee, their removal would be undesirable.

Mr. Parker supported the amendment, and said that this was not an improvement from the public point of view, and the proposal, if carried out, would not do much to widen the road.

The Hon. W. Peel, M.P., said he would be no party to the mutilation of this beautiful church. It was wholly unnecessary for the Council to assist in damaging the church for the sake of merely adding 2 ft. 6 in. to the footway. When they asked the opinion of a body like the Royal Institute they should be led by its Report. It would be little short of an insult, having asked the Institute for its opinion, to set it aside in the manner proposed.

Colonel Rotton said he hoped that the amendment would be carried. For anything the Council could do the alteration would be carried out, as the sum asked for was only £270.

Mr. Beachcroft said he should have thought the matter would have been treated on the basis of an ancient monument. No one who had seen the church could fail to see that a good deal depended on the maintenance of the steps as they are, though if it had been proposed to round the corner of Duncannon Street, he should have sacrified his æsthetic views for utilitarian purposes and vote in favour of an improvement at this point.

Mr. Burns, M.P., was not prepared to help make the Council a zareba behind which the Westminster Council could shelter itself from the artistic and æsthetic views which London architects would undoubtedly bring to bear upon it for tampering with this church. No one could deny that there was congestion of traffic just by the church, and he was convinced that a widening was necessary. He suggested that one of the wealthy parishioners, such as Mr. Astor, should give the vicar of St. Martin's £10,000 with which to engage a competent architect, under whose guidance they could underpin the whole church, including the portico, put it on a sliding gantry, remove it 40 ft. back, and give it an alignment with Duncannon Street. In that way alone could the widening of St. Martin's Place be carried out without injuring the church. He asked the Council to preserve itself from a suggested act of vandalism.

Colonel Probyn said it was absurd to use the word "vandalism," for the church would not be touched at all. Moreover, in the original drawings of the church there was no "table-land" at all between the steps. The "table-land" was put in so as to adjust matters when the level of St. Martin's Lane was disturbed at a later date.

Dr. Longstaff said that if this street required widening the easiest way would be to take down a portion of the National Gallery—that portion which was architecturally the least important.

Eventually Mr. Shaw Lefevre's amendment was carried by a large majority.

THE NOVEMBER EXAMINATIONS.

The Preliminary.

Preliminary Examinations, qualifying for registration as *Probationer R.I.B.A.*, were held simultaneously in London, Birmingham, Bristol, Manchester, and York on the 6th and 7th ult. The examinations in the provinces were conducted by the Allied Societies of the respective centres. Of the 172 candidates admitted, claims for exemption from sitting were allowed to the number of thirty-two. The remaining 140 were examined, with the following results:—

	Examined	Passed	Relegated
London	78	58	20
Birmingham	9	9	0
Bristol	11	7	4
Manchester	25	22	3
York	17	13	4
	140	109	31

The successful candidates, together with those exempted, making a total of 141 newly registered Probationers, are as follows:—

ANDERSON: Arthur William; 4, Hurst Road, Horsham, Sussex [*Master*: Mr. C. H. Burstow].

ASHTON: Arthur; Fern Heath, Murray Road, Rugby [*Master*: Mr. J. T. Franklin].

AUSTIN: George Trevor; Westmead, Augustus Road, Edgbaston, Birmingham [*Masters*: Messrs. Essex, Nicol & Goodman].

BARRETT: Willis Theodore McNaghten; Etruria Vicarage, Stoke-on-Trent [*Masters*: Messrs. Lynam,* Beckett,* & Lynam].

BEARE: Josias Crocker; Stanmore, Newton Abbot [*Masters*: Messrs. Watson & Watson].

BEAUMONT: Baron William Richard; 7, West Southernhay, Exeter [*Master*: Mr. W. Street Wilson].

BELL: Frank; 10, St. James's Square, Manchester [*Master*: Mr. J. W. Beaumont*].

BLACK: Herbert; 51, Stanley Gardens, Belsize Grove, Hampstead [Hamilton's Academy, Victoria, Australia].

BLETHYN: Charles Launcelot; 13, Wellfield Place, Roath Park, Cardiff [*Master*: Mr. Lennox Robertson].

BRADSHAW: Annie Welsby; Greenmont, Heaton, Bolton [Liverpool School of Architecture].

BRAITHWAITE: James Ellis; May House, St. Mark's Avenue, Leeds [*Master*: Mr. W. S. Braithwaite].

BRIGHTIFF: Charles Henry; 80, Argyle Road, Southampton.

BROOKER: Frederick George; Ingleside, Elm Grove, Peckham Rye, S.E. [Polytechnic, Regent Street].

BROOKES: Claud Francis Hooton; Eye, Peterborough [*Masters*: Messrs. Townsend * & Fordham].

BUCK: Roland James; Sunny Hill, Hurst Road, Horsham, Sussex [*Master*: Mr. William Buck].

BURCHETT: Howard William; 4, Raeburn Street, Brixton, S.W. [*Masters*: Messrs. Stevenson * & Redfern].

BURNS: Cecil Leonard; Hillside, Forest Row, Sussex [Tonbridge School].

CATHIE: Hugh Wentworth; The Chestnuts, East Sheen, Surrey [*Masters*: Messrs. Treadwell & Martin].

CHAPLIN: Ernest; 16, Salisbury Road, Hove [Southdown College, Eastbourne].

CLAPHAM: Alfred William; 38, Bromley Road, Beckenham, Kent [*Master*: James Weir *].

COLLCUTT: Philip Martin Blake; 36, Bloomsbury Square, W.C. [*Master*: Mr. T. E. Collcutt *].

COOK: John Oliver; North End Villa, Wrottesley Road, Plumstead [Marlborough House School, Sidcup].

COUSSMAKER: Lannoy John; Forest School, Walthamstow [Forest School, Walthamstow].

CRAWLEY: Percy George; Aboyne Lodge, Woodston, Peterborough [*Master*: Mr. William Boyer].

CROMPTON: Theodore Emlyn; Bedales School, Petersfield, Hampshire [Bedales School, Petersfield].

CROWE: Joseph John; Gweedore, Brentwood [*Master* Mr. A. T. G. Woods].

CROWLEY: Laurence; 56, Kingston Crescent, Portsmouth [Portsmouth Grammar School].

DAY: John; Oak Villa, Hatfield Street, Wakefield [*Master*: Mr. William Rhodes Nunns].

EVANS: William Heather; 8, Portland Street, Southampton [*Master*: Mr. E. W. Evans].

FAIRBURN: Harold John; Bank House, London & County Bank, King's Cross, N. [*Master*: Mr. C. H. M. Mileham].

FARRAR: George Arthur; Springdale, Huddersfield [*Masters*: Messrs. Abbey & Hanson].

FORSYTH: Charles; 33, West Cumberland Street, Glasgow [*Master*: Mr. Robert Turnbull].

FOSTER: Reginald Charles; Newton House, Loughton [*Master*: Mr. H. Tooley *].

FREEMAN: Willie Josiah; 23, Woodbine Terrace, Halifax [*Masters*: Messrs. Jackson & Fox].

FROST: Ernest Leonard; 164, Croydon Road, Anerley, Surrey [*Masters*: Messrs. Still & Wheat].

FULLER; Noel Hamilton Thomas; Huish House, Taunton [Mr. C. H. Samson *].

GADSDON: Arthur Henry; The Hawthorns, West Ashling, Chichester [*Masters*: Messrs. Dale & Gadsdon].

GEATER: Richard Mannall; 21, Loraine Road, Holloway, N. [*Master*: Mr. D. H. Baker].

GEORGE: Wilfrid Harold; Elm Villa, London Road, Cheltenham [*Masters*: Messrs. Prothero * & Phillott].

GODFREY: Walter Hindes; Farleigh, Berlin Road, Catford, S.E. [*Master*: Mr. James Williams].

GOLDSMITH: George Hartley; Odstone Hale, Cheshire [Bowden College].

GOULDER: Arthur Christopher; 44, Fairlop Road, Leytonstone, N.E. [Mercers' School].

GREENWOOD: Augustus George; 73, West Cromwell Road, South Kensington, S.W. [St. Paul's School, W. Kensington].

GROVES: Christopher; Oakdale House, Chester-le-Street, Co. Durham [*Master*: Mr. J. Walton Taylor *].

HALL: Alner Wilson; Crowhurst, 24, Blakesley Avenue, Ealing, W. [St. Paul's School, West Kensington].

HARRINGTON: Llewellyn Harry; Fulhamville, Cambridge Road, Bromley, Kent [Quernmore School].

HARVEY: William; 55, Edgware Road, W. [Polytechnic, Regent Street].

HAYWORTH: Dudley Parks; 91, Cazenove Road, N. [*Masters*: Messrs. Reeves & Styche].

HAZARD: Cecil James; Castle Court, Spa Road, Boscombe, Hants [*Master*: Mr. G. A. Bligh Livesay *].

HEALEY: Alfred John; 70, Regent's Park Road, N.W. [Uppingham School].

HEALEY: Hugh; Derwent Villa, Ivy Lane, Didsbury, nr. Manchester [*Master*: Messrs. Thos. Worthington * & Son *].

HELLARD: Wilfred Bettesworth; Lynwood, Teddington, Middlesex [*Master*: Mr. Harold A. Woodington *].

HENDERSON: John Louis; 7, Greenhill Park, Edinburgh [*Masters*: Messrs. Hay & Henderson].

HIGGINBOTTOM: Frank; 4, Kinnaird Road, Withington, Manchester [*Masters*: Messrs. W. & G. Higginbottom].

HILL: Eliot Foley; 11, St. James's Terrace, Winchester [*Masters*: Messrs. Cancellor & Hill *].

HILTON: Reginald Musgrave; Bayton, Cottenham Park Road, Wimbledon [King's College School, Wimbledon Common].

HODGES: Claude Vivian; 70, Melbourne Road, Leicester [*Master*: Mr. Walter Brand *].

HOLLINGDALE: Stephen Russell; 112, Ledbury Road, Talbot Road, Bayswater, W. [*Master*: Mr. Douglas Matthews].

HOLT: Joseph Bernard; Lancaster Villa, Albert Road, Levenshulme [*Master*: Mr. W. Randolph].

HOPE: Peter Ballingall Malcolm; Spens Crescent, Perth [*Master*: Mr. George P. K. Young *].

HOWITT: C. E.; 14, Mapperley Park Drive, Nottingham [*Master*: Mr. John Howitt *].

HUNNISETT: Hubert; Railway Station, Rye, Sussex [*Master*: Mr. F. H. Humphreys *].

HUTTON: David Bateman; 78, Park Road, Glasgow [*Master*: Mr. Robert Miller].

HYDE: William Henry; Station House, Nailsworth, near Stroud, Gloucestershire [*Master*: Mr. T. A. Lawson].

IREDALE: Athelstan Linton; Landour, Park Road, Stroud [Dean Close Memorial School, Cheltenham].

IRVINE: James Potts; c o A. A. Forman, Central Chambers, Londonderry [*Master*: Mr. A. A. Forman].

JARVIS: John Weston; Essex Villa, Alcester Road, Moseley [*Master*: Mr. F. B. Osborn *].

KEIGHLEY: Henry Frederick; 24, Fernleaf Street, Moss Side, Manchester [*Masters*: Messrs. T. P. Worthington & Son].

LAISTER: Arthur Hopkins; c/o W. Wrigley, Esq., 6, Westgate, Wakefield [*Master*: Mr. W. Wrigley].

LATES: William Burgess; 14, Smallbrook Street, Birmingham [*Master*: Mr. A. E. McKewan *].

LEAHY: William; Llanvair, The Avenue, Yeovil [*Master*: The Very Rev. A. J. Canon Scoles].

LERESCHE: Guy; 10, St. Paul's Road, Kersal, Manchester [*Master*: Mr. John Ely *].

LITTLE: Tom Curry; School House, Longtown, Cumberland [*Masters*: Messrs. Johnstone Bros.]

LOVEITT: Rowland Arthur; 12, Grosvenor Street, Coventry [*Master*: Mr. Frederick Foster].

McDERMOTT: Walter Kingsley; Boro' Green, Kent [*Master*: Mr. Hubert Bensted *].

MACKAY: Alexander Sinclair Wemyss; West Walls, Carlisle [*Master*: Mr. Charles J. Ferguson, F.S.A.*].

MEDCALF: Rupert Boyd; Hazelhurst, Aughton, nr. Ormskirk [*Masters*: Messrs. Medcalf & Medcalf].

MERCER: Robert; 95, Queen Street, Great Harwood, near Blackburn, Lancs. [*Master*: Mr. G. B. Rawcliffe.]

MOSS: Sydney; Rock Bank, Monton Road, Eccles, Manchester [*Master*: Mr. J. W. Beaumont *].

MOXON: George Edmund; 104, Dodworth Road, Barnsley [*Master*: Mr. George Moxon].

MURCH: Spencer Harris Joseph; Oakhurst, Loughton, Essex [*Master*: Mr. Walter Stair].

MURRAY: Andrew Farquharson; 4, Gloucester Place, Portman Square, W. [*Master*: Mr. H. Chatfield Clarke].

MUSTO: Joseph Robert; 129, St. John's Road, Hornsey Rise, N. [*Master*: Mr. W. A. Burr].

MYER: George Valentine; 157, Sutherland Avenue, Maida Vale, W. [*Master*: Mr. John Belcher, A.R.A. *]

NEWTON: Francis Giesler, c/o Aston Webb, Esq., A.R.A., 19, Queen Anne's Gate [*Master*: Mr. Aston Webb,* A.R.A.].

NICHOLLS: Frank; Forest Lodge, Whipps Cross, Leyton, Essex [*Master*: Mr. Edwin O. Sachs].

OLD: Frank Alfred Charles; 5, Poynings Road, Highgate, N. [*Masters*: Messrs. Wylson * & Long *].

OWEN: Gwilym Morris; c/o Dr. R. O. Morris, 72, Westbourne Road, Birkenhead [Portmadoc County School].

PAGE: Bernard Culmer; 112, Clapham Road, S.W. [Tonbridge School].

PAGE: John; St. Aubyn's, South Lowestoft [St. Aubyn's School, Lowestoft].

PARR: Harold James; 16, Claribel Road, Brixton, S.W. [*Master*: Mr. Wm. Woodward *].

PATERSON: William Esson; The Shrubbery, Gloucester Road, Cheltenham [*Master*: Mr. R. Hooper Turner].

PAYNE: Albert Ernest Stanley; 39, Jerningham Road, New Cross, S.E. [*Master*: Mr. W. W. Gwyther *].

PEARSON: John Herbert; 83, Balham Park Road, S.W. [*Master*: Mr. George Pearson *].

PETTIT: Walter Alfred Seamer; 46, Sarsfeld Road, Balham, S.W. [*Master*: Mr. W. H. Seth-Smith *].

PICKARD: Walford Harry; Camden House, Talbot Street, Whitchurch, Shropshire [*Master*: Mr. J. Harry Pickard].

PLOTTEL: Joseph; 62, Bolckow Street, Middlesbrough [*Master*: Mr. Robert Moore].

PORTER: Henry Arthur; 131, Old Road, Gravesend [Modern School, Gravesend].

POTTER: Charles Henry; The Dimple House, Matlock Bridge [Derby Municipal Technical College].

POTTS: Arthur Frederick; Elim, Granleigh Road, Leytonstone [Polytechnic, Regent Street].

POTTS: Gilbert Ackroyd; Quorndon, Brackley Road, Monton Green, Manchester [*Masters*: Messrs. Potts,* Son, & Hennings].

PYPER: William; Hillhead of Pitfodels, Cults-by-Aberdeen [*Master*: Mr. William Kelly].

RAYNER; Leslie George; 1, Constitution Crescent, Gravesend [*Masters*: Messrs. Rayner & Bridgland].

REED: Charles Albert; 47, Caldervale Road, Clapham, S.W. [*Master*: Mr. E. A. E. Woodrow *].

RHODES: Thomas Herbert; 17, Hyde Terrace, Leeds, Yorkshire [*Masters*: Messrs. Kendal & Bakes].

ROBERTSON: Alexander Smeaton; 22, George Street, Perth, N.B. [*Master*: Mr. G. P. K. Young *].

ROUND: Douglass Gray; Sutton Court, Sutton, Surrey [*Master*: Mr. Aston Webb, A.R.A.*].

RYAN: John Aloysius; 1, Metal Exchange Buildings, Whittington Avenue, E.C. [*Master*: Mr. W. P. Ryan].

SAVAGE: Hubert; Arrandale, Beaconsfield Road, St. Albans, Herts [*Master*: Mr. E. Harding Payne*].

SAW: Duncan Grout John; 58, Browns Wood Road, Green Lanes, N. [St. Thomas' Charterhouse School].

SAWYER: Harold Selwood; 2, Grafton Road, Winchester, Hants [*Master*: Mr. J. Ashton Sawyer].

SAYNER: John Harold; 6, Lancaster Road, Harrogate [*Master*: Mr. George W. Atkinson].

SCOTT: Harold Seymore; Overdale House, Whitehall Road, Handsworth, Birmingham [*Master*: Mr. Matthew J. Butcher].

SECCOMBE: Henry Edward; 13, Victoria Road, Clapham Common, S.W. [*Master*: Mr. John T. Lee *].

SINCLAIR: William Charles Braxton; Lynton, Parkhurst Road, Bexley, Kent [*Master*: Mr. W. Goldsmith *].

SMITH: Bouton Charles; Warren Height, Caversham, Oxon. [*Master*: Mr. Wm. Ravenscroft *].

SMITH: Harold Seymour; 12, Henrietta Street, Old Trafford, Manchester [*Master*: Mr. H. R. Price].

SOLOMON: Henry; 41, Bromwich Street, Haulgh, Bolton [*Master*: Mr. N. H. Jameson].

SOLON: Paul Harold; The Villas, Stoke-on-Trent, Staffs [*Masters*: Messrs. Wood & Hutchings *].

SPOOR: Stanley Miles; Portinscale House, East Putney [King's College School, Wimbledon Common].

STOCKDALE: William; 19, Waterville Road, North Shields, Northumberland [*Masters*: Messrs. T. A. Page & Son].

SUDBURY: Ernest Allen; Cavendish House, The Park, Nottingham [*Master*: Mr. Arthur Marshall *].

SYKES: Frank; 3, West View, Windermere Road, Kendal [*Master*: Mr. Henry Lord *].
TALL: Robert John; 7, The Grove, Gravesend [*Master*: Mr. Chas. Cobham].
TALLON: Thomas T.; 31, Gardiners Place, Dublin [*Master*: Mr. W. Hague].
TASKER: Harry Francis; Maryon Hall, Frognal Lane, Hampstead [*Master*: Mr. F. W. Tasker *].
THOMAS: Basil Walter; St. Bede's Hill Lane, Southampton [*Master*: Mr. Thomas].
THORNE: Thomas; Claremont House, Erlanger Road, Brockley, S.E. [*Masters*: Messrs. Bell, Withers, & Meredith *].
TINDALL: John Empson; Crown Hotel, Lavender Hill, S.W. [*Master*: Mr. W. G. Ingram].
TURPIN: Wilfrid; Park View, Roker, Sunderland [*Master*: Mr. Joseph Spain *].
UNWIN: Harry; 27, Hammond Street, Bolton [*Master*: Mr. H. Pennington].
WADE: Fred; 47, Beamsley Road, Frizinghall, Bradford [*Master*: Mr. E. H. Parkinson].
WALKER: Frederick Arthur; Ghyllcroft, Tanza Road, Hampstead, N.W. [*Master*: Mr. T. J. Bailey *]
WESTON: Percy; Mona House, Ranmoor Cliffe, Sheffield [*Master*: Mr. Joseph Smith *].
WETHERILT: Newton Charles; 86, Boundary Road, South Hampstead, N.W. [Polytechnic, Regent Street].
WHITE: Oswald; Barton House, Barton-under-Needwood, near Burton-on-Trent [Birmingham Central School of Art].
WILLMOTT: Edmund Charles Morgan; 197, Richmond Road, Roath, Cardiff [*Master*: Mr. Lennox Robertson].
WILSON: Allen Woodward; Brinkdale, Park Road, Peterborough [*Master*: Mr. Wm. Boyer].
WILSON: Russell; 5, Milner Road, Meersbrook Bank, Sheffield [*Masters*: Messrs. Hall & Fenton].
WORSSELL: James Lloyd; 24, Harrington Street, Regent's Park, N.W. [*Master*: Mr. E. A. E. Woodrow *].
WYLIE: Richard; 20, Wilberforce Terrace, Gateshead-on-Tyne [*Masters*: Messrs. Cackett * & Burns Dick].

The asterisk (*) denotes members of the Institute.

The Intermediate.

The Intermediate Examination, qualifying for registration as *Student R.I.B.A.*, was held in London and the various provincial centres indicated below on the 6th, 7th, and 8th November. The examinations in the provinces were conducted by the Allied Societies of the respective districts. Fifty-nine candidates were examined, the results being as follows:—

	Total Examined	Passed	Relegated
London	45	29	16
Bristol	6	2	4
Manchester	8	4	4
	59	35	24

The successful candidates, whose names have been entered on the Register of *Students R.I.B.A.*, are as follows, the names being given in order of merit, as placed by the Board of Examiners:—

HOPE: Arthur John [*Probationer* 1895]; Four Lane Ends, Atherton, Manchester [*Masters*: Messrs. Bradshaw & Gass].
GAUNT: Edward Lawrence [*Probationer* 1900]; Briarfield, Ilkley, Yorks. [*Master*: Mr. Thos. Barker].
DOBSON: Walter Ernest [*Probationer* 1894]; Gothic House, Chislett Road, West Hampstead [*Master*: Mr. Ernest George*].
ALLAN: David Lindsay [*Probationer* 1892]; 10, Airlie Terrace, Dundee [*Master*: Mr. J. Murray Robertson *].
HALL: Herbert Alfred [*Probationer* 1899]; 1, Quarry Terrace, Hastings [*Master*: Mr. Philip Tree *].
HOSKINS: Henry Joseph Bissaker [*Probationer* 1898]; 23, Longmore Street, Birmingham [*Masters*: Messrs. Cossins, Peacock, & Bewlay].
TAYLOR: Alfred John [*Probationer* 1896]; 8, New Bond Street, Bath [*Master*: Major C. E. Davis, F.S.A.].
HASWELL: Frederick [*Probationer* 1898]; 77 Tyne Street, North Shields [*Master*: Mr. F. R. N. Haswell *].
WHIPP: Thomas William [*Probationer* 1900]; 156, Falsgrave Road, Scarborough [*Master*: Mr. C. Edeson].
PRINCE: Harry [*Probationer* 1897]; 11, Clanricarde Gardens, Bayswater, W. [*Master*: Professor R. Elsey Smith*].
STEPHENS: Samuel Cooper [*Probationer* 1894]; Nursery Road, Hockley, Birmingham [*Master*: Mr. J. G. Dunn *].
MILNE: Oswald Partridge [*Probationer* 1899]; 3, Dynevor Road, Bedford [*Masters*: Sir A. W. Blomfield & Sons].
DAVIDGE: William Robert [*Probationer* 1898]; Hopetoun, Teddington Park Road, S.W. [*Master*: Mr. Marshall Hainsworth].
SMITH: Neil Campbell [*Probationer* 1900]; 1, New Court, Temple, E.C. [*Master*: Mr. Reginald T. Blomfield].
DIXON: Ernest John [*Probationer* 1896]; 23, Idmiston Road, Stratford, E. [*Master*: Mr. Charles Trubshaw *].
GRADWELL: Arthur Roland [*Probationer* 1898]; Bank Villas, Blackburn [*Master*: Mr. A. R. Gradwell].
HOOPER: Vincent [*Probationer* 1896]; Elms Road, Redhill, Surrey [*Master*: Mr. T. Rowland Hooper *].
WILSON: John Goddard [*Probationer* 1899]; 76, Warwick Road, Maida Hill, W. [*Master*: Mr. Aston Webb,* A.R.A.]
BALLARDIE: John Hutcheson de Caynoth [*Probationer* 1895]; Hampden House, Phœnix Street, N.W. [*Master*: Mr. Alfred Waterhouse, R.A.*].
HOOLE: George Bernard Holland [*Probationer* 1891]; Lastingham, Hornsey Lane, Highgate, N. [*Master*: Mr. E. Hoole *].
LOVEGROVE: Gilbert Henry [*Probationer* 1898]; Eboracum, Herne Hill, S.E. [*Master*: Professor R. Elsey Smith*].
CASTELLO: Manuel Nunes [*Probationer* 1899]; 43, Compagne Gardens, S.W. [*Master*: Mr. Lewis Solomon*].
NAYLOR: James John Sydney [*Probationer* 1897]; 9, St. Stephen's Square, Bayswater, W. [*Master*: Mr. E. W. Jennings *].
BENNETT: Robert [*Probationer* 1898]; c/o Messrs. Parker & Unwin, the Quadrant, Buxton [*Master*: Messrs. Parker & Unwin].
PARKINSON: Charles Edmund Lancaster [*Probationer* 1899]; 56 Upper Kennington Lane, S.E. [*Master*: Mr. A. Hopkinson].
CHILWELL: Benjamin Charles [*Probationer* 1898]; Oakeswell, Wednesbury [*Master*: Mr. A. J. Dunn*].
NOTLEY: Albert Carr [*Probationer* 1898]; Larksfield, Englefield Green, Staines [*Master*: Mr. Edmund Woodthorpe*].
CLARKE: Herbert Ford [*Probationer* 1898]; 22, Sandy Grove, Eccles Old Road, Pendleton, near Manchester [Manchester Municipal School of Art].
LEEPER: Leonard [*Probationer* 1899]; Belton Rectory, Great Yarmouth [*Master*: Mr. J. W. Cockrill*].
LING: Frederick Allen [*Probationer* 1897]; 1, Pitcairn Road, Mitcham, Surrey [*Master*: Mr. F. W. Foster].

MIDWINTER: Arthur Adair [*Probationer* 1896]; St. Paul's Vicarage, Lisson Grove, N.W. [*Masters*: Messrs. Boehmer & Gibbs *].

REES: William Beddoe [*Probationer* 1898]; 14, Norbcote Street, Cardiff [*Master*: Mr. W. J. Grylls].

SUTTON: Charles Ernest Burgett [*Probationer* 1895]; 11, Winwick St., Warrington [*Master*: Mr. William Owen*].

THICKPENNY: Charles Reginald [*Probationer* 1896]; Breydon House, Lansdowne Road, Bournemouth [*Master*: Mr. Sydney Tugwell].

TOMSON: Frank Emerson [*Probationer* 1898]: The Châlet, King's Norton, Birmingham [*Master*: Mr. William Hale *].

The asterisk (*) denotes members of the Institute.

The Final and Special.

The Final and Special Examinations, qualifying for candidature as *Associate R.I.B.A.*, were held in London from the 16th to the 23rd November. Of the fifty-one candidates examined, twenty-six passed, and the remaining twenty-five were relegated to their studies. The successful candidates, now qualified (subject to Section 8 of the Charter) for candidature as Associates, are as follows:—

BALL: Theophilus Bradford [*Probationer* 1894, *Student* 1897]; 1, Albert Terrace, Weston-super-Mare.

BANFIELD: Ernest William [*Probationer* 1894, *Student* 1898]; 15, Penford Street, Knatchbull Road, Camberwell.

BRUMELL: George, jun. [*Probationer* 1893, *Student* 1896]; Morpeth.

CAUTLEY: Henry Munro [*Probationer* 1893, *Student* 1896]; 61, Millbank Street, Westminster, S.W.

†COGSWELL: William Gerald [*Special Examination*]; 28, Theobald's Road, and Wallasey, Chester.

†CROOK; William Edward Froome [*Special Examination*]; 64 Thornfield Road, Uxbridge Road, W.

DOUGLASS: Henry Archibald [*Probationer* 1892, *Student* 1897]; 14 Clifton Terrace, Brighton.

GORDON: Thomas Wallis [*Probationer* 1890, *Student* 1892]; 4 Mansfield Grove, Nottingham.

GOSLETT: Alfred Harold [*Probationer* 1895, *Student* 1897]; Lime Place, Great Stanmore, Middlesex.

HARRISON: Shirley [*Probationer* 1897, *Student* 1898]; 7 St. Martin's East, Leicester.

†HUTCHINSON: Charles Edward [*Special Examination*]; 28, John Street, Bedford Row, W.C.

MACGIBBON: Alfred Lightly [*Probationer* 1895, *Student* 1897]; 23, Learmouth Terrace, Edinburgh.

MAYHEW: Robert Henry Jewers [*Probationer* 1897, *Student* 1898]; Edmondsbury, Genoa Road, Anerley, S.E.

MORGAN: William Vincent [*Probationer* 1893, *Student* 1895]; 24, King Street, Carmarthen.

OWEN: Reginald Wynn [*Probationer* 1894, *Student* 1896]; 24, Oxford Road, Waterloo, Liverpool.

PAPWORTH: Alfred Wyatt [*Probationer* 1897, *Student* 1898]; 10, Park Place Villas, Maida Hill, W.

QUAIL: John [*Probationer* 1897, *Student* 1898]; 105, Warwick Street, Leamington Spa.

SMITH: Frederick John Osborne [*Probationer* 1893, *Student* 1897]; 7, Old Queen Street, Westminster, S.W.

TENCH: Edwin James [*Probationer* 1894, *Student* 1896]; 20, St. Andrew's Street, Cambridge.

THOMAS: Christopher Boswood [*Probationer* 1894, *Student* 1896]; 28, Cambridge Terrace, Hyde Park, W.

THORP: Norman [*Probationer* 1896, *Student* 1898]; 23, Union Road, Clapham, S.W.

†TINKER: Henry Archibald [*Special Examination*]; 4, Hornton Street, Kensington, W.

TURNER: Philip John [*Probationer* 1894, *Student* 1898]; The Acacias, Stowmarket, Suffolk.

WALFORD: William John [*Probationer* 1894, *Student* 1898]; Chesterfield, 214, Anerley Road, Anerley, S.E.

WELLS: Robert Douglas, B.A.Cantab. [*Probationer* 1898, *Student* 1898]; 13 Porchester Terrace, W.

WHEELER: Edwin Paul [*Probationer* 1893, *Student* 1896]; 3 Phené Street, Chelsea, S.W.

[† Candidates marked thus † were admitted to the Special Examination, under the following regulation:—"Architects in practice not less than 25 years of age, and chief assistants over 30 years of age, who desire to be admitted as Associates, can be exempted from passing the Preliminary and Intermediate Examinations and from sending in Testimonies of Study. They can be admitted, by resolution of the Council in each case, to a Qualifying Examination (namely, the Final of the three examinations), which is conducted with especial regard to the requirements of such architects, their professional works and position being duly taken into account by the Board of Examiners."]

The following table shows the number of failures in each subject of the Final and Special Examinations:—

I.	Design	24
II.	Mouldings and Ornament	10
III.	Building Materials	5
IV.	Principles of Hygiene	1
V.	Specifications	4
VI.	Construction: Foundations, &c.	3
VII.	Construction: Iron and Steel, &c.	3

Ashpitel Prize 1900.—On the recommendation of the Board of Examiners the Council have awarded this Prize to Mr. Shirley Harrison, and extra prizes of Five Guineas each to Mr. C. H. F. Comyn [*A.*] and Mr. C. E. Varndell [*A.*].

MINUTES. III.

At the Third General Meeting (Business) of the Session, held Monday, 3rd December 1900, at 8 P.M., Mr. E. A. Gruning, *Vice-President*, in the Chair, with 25 Fellows (including 12 members of the Council) and 28 Associates (including 2 members of the Council), the Minutes of the Meeting held 12th November 1900 [p. 48] were taken as read and signed as correct.

The Chairman, having announced the decease of Henry Currey [*F.*], *Vice-President* 1874–77 and 1889–93, and Francis Chambers [*F.*], moved, and it was thereupon resolved, that a message of sympathy and condolence from the Institute be conveyed to their nearest relatives.

The Hon. Secretary having announced the receipt of various donations to the Library [*see* SUPPLEMENT], a Vote of Thanks to the donors was passed by acclamation.

The following members, attending for the first time since their election, were formally admitted, and signed the respective Registers, viz. Frank William Wills, *Fellow*, President of the Bristol Society of Architects; Arthur Henry Ough, *Associate*.

The Secretary announced that by a resolution of the Council under By-law 20, the following had ceased to be members of the Royal Institute: William St. John Hu Hancock, James Barlow Fraser, John Treadway Hanson, and George Highton, of the class of *Fellows*; Robert William England, Thomas Henry, George Vigers, Ernest Outram Cummins, Patrick James Jervis Fay, William Frame, Edward Francis Roberts, and William Vaughan, of the class of *Associates*.

The lists of candidates who had passed the November Preliminary and Intermediate Examinations were brought up, and the Meeting agreed to take them as read [*see* p. 57.]

The Secretary read the names of candidates who had passed the November Final and Special Examinations [*see* p. 60].

The following candidates for membership in the various classes were elected, by show of hands, under By-law 9, viz.:—

As Fellows (6).

LOUIS AMBLER [*A.* 1888].
THOMAS PHILLIPS FIGGIS [*A.* 1889].
HERBERT GEORGE IBBERSON [*A.* 1889].
EDWARD JEAFFRESON JACKSON (Sydney, N.S.W.).
CHARLES EDWARD MALLOWS (Bedford).
JOHN WILLIAM SIMPSON [*A.* 1882].

As Associates (21).

SAMUEL CHESNEY [*Probationer* 1892, *Student* 1895, *Qualified* 1900] (Stourbridge).
GEORGE EDWARD CLAY [*Probationer* 1890, *Student* 1894, *Qualified* 1900] (Warrington).
CHARLES HEATON FITZWILLIAM COMYN [*Probationer* 1895, *Student* 1898, *Qualified* 1900].
HAROLD COOPER [*Probationer* 1896, *Student* 1897, *Qualified* 1900] (Blackburn).
CHARLES ARCHIBALD DAUBNEY, P.A.S.I. [*Qualified* 1900, *Special Examination*].
WILLIAM ERNEST EMERSON [*Probationer* 1895, *Student* 1896, *Qualified* 1900].
JAMES ERNEST FRANCK [*Probationer* 1893, *Student* 1897, *Qualified* 1900].
ARTHUR REGINALD GROOME [*Probationer* 1893, *Student* 1896, *Qualified* 1900] (Manchester).
HERBERT HAINES [*Probationer* 1893, *Student* 1895, *Qualified* 1900].
EMANUEL VINCENT HARRIS [*Probationer* 1893, *Student* 1897, *Qualified* 1900].
JOHN STANLEY HEATH [*Probationer* 1895, *Student* 1897, *Qualified* 1900].
WILLIAM BONNER HOPKINS [*Qualified* 1893].
PERCY ERSKINE NOBBS, M.A. Edin. [*Probationer* and *Student* 1897, *Qualified* 1900] (Edinburgh).
SIDNEY VINCENT NORTH [*Qualified* 1900, *Special Examination*].
CYRIL WONTNER SMITH [*Probationer* 1893, *Student* 1897, *Qualified* 1900].
WILLIAM HERBERT SWANN [*Probationer* and *Student* 1899, *Qualified* 1900].
ALEXANDER SYMON [*Probationer* 1898, *Student* 1899, *Qualified* 1900].
ANDREW MITCHELL TORRANCE, Jun. [*Probationer* 1893, *Student* 1897, *Qualified* 1900].
ROBERT PERCIVAL STERLING TWIZELL [*Probationer* 1897, *Student* 1898, *Qualified* 1900]; Newcastle-on-Tyne.
CHARLES EDWARD VARNDELL [*Probationer* 1896, *Student* 1899, *Qualified* 1900, *Grissell Prizeman*].
CLYDE FRANCIS YOUNG [*Probationer* 1895, *Student* 1898, *Qualified* 1900].

As Hon. Associate.

EDMUND WILLIAM SMITH, Memb. Roy. Asiatic Soc., Archæological Surveyor to the Government of India, N.W. Provinces and Oudh Circle, and Curator of the Lucknow (Government) Museum, Oudh.

As Hon. Corresponding Members.

JOSEPH ANTOINE BOUVARD, Director of the Architectural Works of the Paris Exhibition, 1900 (Paris).
L. C. PEDRO D'AVILA, Hon. Architect to the King of Portugal, Architect to the Government, Member of the Royal Academy of Fine Arts, Lisbon.

The Chairman stated that he had been requested by the President to announce that he (the President) had been desired by the India Office to assist the Government in the appointment of Consulting Architect to the Government of Bombay, and that the President would be glad to receive applications from members desirous of offering themselves as candidates for the post [*see* Supplement].

The Chairman having referred to the further business on the notice-paper—viz. the motion for the adoption of certain amendments to the Form of Agreement and Schedule of Conditions for Building Contracts, as agreed upon between the Council of the Royal Institute and the Council of the Institute of Builders—stated that the Council, in consequence of representations made to them, had decided to postpone consideration of Clause 32 in order to consider it further, and that they would bring the clause forward at a future meeting. The Chairman then proposed the discussion of the other clauses *seriatim*, and the adoption of Clause 1 having been moved and seconded, in the course of discussion it was pointed out that as that clause contained a reference to the new Clause 32, the Meeting could come to no definite conclusion upon it: whereupon the Chairman invited an expression of the views of the Meeting upon Clause 32, and various members having discussed its provisions, the Chairman stated that the opinions thus expressed should have due weight with the Council in their reconsideration of the Clause [*see* Appendix].

The proceedings then closed, and the meeting separated at 9.35 P.M.

APPENDIX.

Amendments to the Form of Building Contract.*

Discussion.

The Chairman, in opening the discussion, stated that he had to announce that the Council, in consequence of representations made to them, had decided to postpone consideration of Clause 32 in order to consider it further, and to bring the clause forward at a future meeting. For the present he proposed that the Meeting should consider the other amended clauses, taking them seriatim, clause by clause.

The Chairman then formally moved the adoption of Clause 1 as amended.

The Hon. Secretary seconded.

Mr. William Woodward [*A.*] said that if Clause 32 was not to be discussed, the Meeting would be debarred from expressing its opinion on the most important matter connected with these amended Conditions. The history of these Conditions was pretty well known to every member of the Institute. The matter had occupied their attention for something like twenty years. He could never understand why an attempt had ever been made to alter the Conditions which were mutually agreed to by builders and architects in 1882. At the time of the issue of these new Conditions of Contract which were now proposed to be amended, he had stated in that room that no respectable contractor would ever be found to sign them. That statement had been demurred to by Mr. E. T. Hall, whom he regarded as the leading spirit in bringing about the new Form of Contract; now apparently it had turned out that no responsible first-class contractor would have anything to do with those conditions. Mr. Woodward then went on to discuss the amended Clause 1, of which the adoption had been moved, and proposed that the word "reasonable" in line 2 should be omitted. The word meant nothing. What the architect would consider reasonable the contractor would, of course, consider unreasonable, and difference would at

* The clauses as they stand in the present Form, and the same clauses as proposed to be amended, are set out in parallel columns in the *Supplements* to the Journal, Nos. 1 and 2.

once arise. Further on, the Clause said, "He shall, before proceeding with such work, give notice in writing to this effect to the architect;" and "In the event of the architect and contractor failing to agree as to whether or not there is any excess, and of the architect deciding that the contractor is to carry out the said work, the contractor shall," &c. If a builder could be found to sign such a condition as that, he could only say that he (the builder) would deserve all that might arise from it.

The CHAIRMAN stated that the clauses, as amended, had been agreed to by the Institute of Builders.

Mr. WOODWARD said he was aware of that, but he was looking at the matter fairly, on behalf both of builder and architect. The clause stated: "If the work shown on any such further drawings or details, or necessary to comply with any such instructions, &c." Take stone work, for instance. The only way in which the builder, and the architect too, could find out whether the full-size details were or were not in excess of the contract was by the same careful process which had been gone through by the quantity surveyor. With regard to girths of cornices again, the same process must be gone through, because the stonework was in so many feet cube, and the cornice in so many feet superficial. Was it therefore to be expected that the architect should take the trouble to find out whether or not the quantities supplied were or were not in excess of the contract? He would suggest in regard to these quantities that instead of stopping the work—because these questions meant absolute stoppage of the work, inasmuch as both architect and builder must satisfy themselves that these matters were not in excess of the contract—the question as to whether or not it was in excess should be left to the final settlement of the accounts. Then four or five lines from the end the clause said: "The Contract Drawings and Specification shall remain in the custody of the architect," &c. He suggested that the words "the property" be substituted for "in the custody," so that the clause read: "The Contract Drawings and Specification shall remain the property of the architect."

The CHAIRMAN explained that such a stipulation in the contract would be contrary to the law of the land.

Mr. T. H. WATSON [*F.*] seconded Mr. Woodward with regard to the omission of the word "reasonable." The word was implied. It must be the reasonable satisfaction.

Mr. E. W. HUDSON [*A.*] said that if the word were implied there was no reason why it should not appear in print.

Mr. T. M. RICKMAN [*A.*], rising to order, and referring to the Chairman's statement that the Council had decided to postpone consideration of Clause 32, pointed out that in Clause 1 there was a reference to Clause 32, and he did not see how they could discuss Clause 1 until they had Clause 32 in its final form before them.

[Ultimately, it having been suggested that the views of the Meeting on Clause 32 might be obtained and laid before the Council when they were reconsidering the clause, it was agreed to postpone consideration of the other clauses and restrict the discussion to Clause 32, it being understood that members should confine themselves to an expression of their views on the new clause, and refrain for the present from moving any amendment.]

Mr. J. DOUGLASS MATHEWS [*F.*] said that as Chairman of the Practice Committee he had come prepared to move an amendment to Clause 32 on behalf of his Committee, but, in deference to the wish of the Council, he would not then bring forward his amendment, but simply offer a few observations on the new clause. The question depended upon whether the reference was to take place "after the work is completed," or "at any time during the progress of the work by the request of either party." This matter was by no means new, as it was considered by the Practice Committee some six or eight years ago in their negotiations with the Institute of Builders, and over and over again discussed, and ultimately it was decided that, although they regretted that the Institute of Builders could not agree to that clause, it was so important that the Institute of Architects could not give way, and, under the circumstances, the forms of contract were printed, and had been in use ever since. It would, he thought, be desirable for the meeting to know in what way this suggestion had originated: whether the Institute of Builders approached the Council of the Institute, or the Council of the Institute proposed a conference with the builders.

The CHAIRMAN said he would explain the matter as far as he could. It would be recollected that the Heads of Conditions issued in 1880, and afterwards in use for many years, were agreed to by the builders and architects both. About the year 1890 the Practice Committee undertook the preparation of a new form of contract, but, unfortunately, friction arose between them and the Committee of Builders whom they met. Ultimately, in 1895, the Institute adopted the form now in use, which was not approved of by the builders. In 1898 a communication came from the Institute of Builders to the Council asking whether a modification of this form could not be arrived at which would be satisfactory to both parties. The Institute Council thereupon appointed a Special Committee to meet the builders and discuss the matter. The Committee consisted of Mr. Emerson (then Hon. Secretary), Mr. Aston Webb, Mr. Blashill, Mr. Slater, and himself (Mr. Gruning.) Later on Mr. E. T. Hall was invited to join the Committee; and later on still, when Mr. Emerson became President, Mr. Graham joined it as Hon. Secretary of the Institute. The Committee had held eleven long meetings, at two of which delegates from the Institute of Builders were present. As the result of their deliberations, a report was made to the Council in October last, which the Council adopted. At the meeting of the Council held that day representations from various quarters having been made of objections and amendments, particularly to Clause 32, the Council decided that it would be better not to force a decision on the Institute at that meeting, and with that view he had been instructed to say that the Council wished the consideration of Clause 32 to be postponed.

Mr. DOUGLASS MATHEWS thanked the Chairman for giving them these particulars, and said that everybody would be agreed that it was most desirable, if they could, to get a form of contract which would be received by both the architects and the builders. But would the alteration in Clause 32 be likely to bring about that result? The clause was one of such importance that they must be very careful before giving it their assent; if passed, it might be a very serious matter for architects, not only in relation to their clients, but to their buildings in general. The Council had not told them whether there was any great necessity for the proposed change. He knew that the Institute of Builders had made objections to the form of contract, but he was not aware that it had interfered in any way with the carrying out of very many large works by members of the Institute of Builders. Coming to the objections of the Practice Committee, they were these: first of all, the position of the architect was most seriously interfered with. They had always taken to themselves the credit of being a body of honourable men whose business it was to act in a kind of semi-judicial manner between the employer and the contractor, and trusted by both. If, however, this clause were carried into effect, the architect would come to be looked upon as a servant by the employer, and an autocrat by the builder. The position of the architect, being that of a fair-dealing man who would settle questions as they arose between one and another, would be taken away, because each party would have an opportunity of applying to an arbitrator at any time. The builder too, he thought, would suffer quite as much

as the employer, because questions must occur between the builder and the employer; and the architect should settle all differences as they arose. Another point was that the architect would no longer have control of his work during its progress; he must be superseded, or, if not superseded, must be subject to some other architect, it may be one of less experience than himself. At any rate, he would be liable from time to time to have all questions referred to some other than himself to decide. Again, if an arbitrator was to be called in at every difference, where did the architect's responsibility to the client come in? At the present time the architect was responsible to his employer; but if his position was to be constantly questioned, it would be a very simple thing for the architect to shift the responsibility on to the arbitrator, and if anything went wrong the employer would have no remedy at all; the architect would say at once: "I required such and such a thing, but the arbitrator took a different view, and therefore my responsibility ceases." Then another point: the clause states that the works should not be stopped pending the reference. It was well known what the effect of that would be. It was quite impossible to call in an arbitrator at any moment, and if these arbitrations were constant (as he assumed they would be), there must be days, or perhaps a week, or even more, from the time of giving notice to the arbitrator before getting his award. The work would therefore be most materially delayed by circumstances over which neither the employer nor the contractor would have control. Many of them were old enough to remember that the system of building and the relation of builder and architect were different from what they were, say, 20 or 25 years ago; that the architect was then in personal communication with the builder, and the builder, feeling that his credit was often at stake, was quite willing to put right what the architect complained of as being wrong. But what is the case now? Architects seldom saw the contractor, and, in nine cases out of ten, if they did see him, he knew but little about the work, so they were practically in the hands of a foreman or the builder's clerk. Consequently, under these circumstances, friction must frequently arise. Naturally a builder would take the report of his own employé. Without perhaps knowing all the circumstances, he would say "We cannot have this," and therefore arbitration would ensue. That would put the architect and contractor at loggerheads, and if this began at the commencement of the job, the result would be particularly unhappy to everybody concerned. Then if the contractors appealed to arbitration, architects would be bound to do so in the interests of their clients whether they liked it or not. The contractor would do it to justify himself and see that he was properly paid for his work. On the other hand the architect would take great care that every requirement of the drawings and specification was fully carried out—carried out not in the spirit but to the letter, and they all knew that it was a very difficult thing to get work executed in such a way that they were absolutely satisfied, and had not some cause for complaint. Another objection was that the employer must be made acquainted with every difference that arose between the architect and the contractor. He did not think that would help the architect much. The employer would soon tire of that kind of thing, and would want to know where the architect came in, and of what use he was. Again, architects themselves would be in a very awkward position; they would feel the responsibility of insisting upon all that they required. Architects sometimes make mistakes, and it is not likely that every arbitration would be decided in their favour, and then would come the question as to who was to bear the cost of the arbitration. It would be only natural for employers to say, "We look upon you as a competent man. Why did you make these assertions if they were not correct?" and it would be a not unnatural thing for him to say, "If you make these assertions, and if you are wrong like other people, you must pay for it." For himself he could not see the necessity for this clause. Contractors often say, "We know Mr. So-and-So, and it does not matter what contract we have; we are in his hands and we know we are safe, therefore we trust him, no matter what the conditions are." That was a satisfactory sort of arrangement which did obtain, and he hoped would continue to obtain for a great many years to come. He did not see that it need interfere with the contract whether the clause was in or out. It would make no difference to respectable contractors and respectable architects. But if a contractor could not trust the architect, or felt that he was not competent, it was an easy matter for him to say, "No, I will not take this work unless I have this arbitration clause put in." That gave him an opportunity of having it inserted. Then the employer would be told the nature of the requirement, and it would be for him to say whether he would give up the objection or not, as he pleased.

Mr. William Woodward endorsed all that Mr. Douglass Mathews had said in reference to Clause 32, but wished to emphasise one particular point to which he took exception. He maintained that the Council of the Institute was not acting in the best interests of the profession when it proposed to leave to arbitration that which in the old conditions of contract was not left to arbitration—viz., the absolute control of the architect over materials and workmanship. He could quite understand that the builders would agree to any contract which provided such an arbitration clause as that. The arbitration clause left open everything that could occur during the progress of the works. Imagine the result. The architect goes on the building and condemns the bricks; the contractor at once says, "No; I believe those bricks are excellent bricks, I shall not move them from the job." Arbitration must then ensue. To be brief, he would suggest that Clause 16 be added to the exceptions—that is to say, the architect retaining his full power under Clause 32 with regard to materials and workmanship.

The Secretary, in reply to a question, stated that the yearly sale of the present form of contract amounted to between three and four thousand copies a year.

Mr. Maurice B. Adams [*F.*] said that gave them a fairly good idea of the number that were in use. Personally, he had found the form most useful, and he had been readily able to induce clients, both District Councils and private gentlemen, to adopt these conditions without question because they emanated from the Institute. But if this arbitration clause coupled with Clause No. 1 was to be carried, he could not possibly agree to adopt the amended form himself. Therefore every argument he could bring to bear upon the Council would be decidedly in opposition to this clause being carried. Members could only judge of these things as they appeared to them, and persons in ordinary practice must confirm what he had said, that such a clause as this might prove to be simply fatal in dealing with a builder of whom one previously knew nothing. There were some builders with whom he would not mind personally what the conditions were, because he had worked amicably with them, and had never had the slightest hitch, having been on some occasions even able to settle all variations without calling in the quantity surveyor. But there were other persons with whom he had had quite a different experience; and life would be perfectly dreadful if the architect had the bogey of an arbitrator held over his head every time he felt it to be necessary in justice to his clients to put his foot down and say that he meant to insist upon exactly what had been bargained for. He had been told by persons who ought to know that this new clause was simply one of money, and that where money was in question, there an arbitrator ought to be available. If those who took that view could

explain exactly what they meant he should be glad, because he quite agreed that on questions of money there must, as at present, be the provision for a reference.

The CHAIRMAN stated that so far as he knew no question of money had ever been considered by either the Committee or the Council in connection with this clause.

Mr. MAURICE ADAMS agreed that he did not see it from that point of view at all. Therefore he was bound to exercise what little influence he might have in urging the Council to reconsider this clause. From what the Chairman had said he supposed it was impossible for this matter to go before the Practice Committee again. Friction seemed to have arisen which induced the Council to adopt another course on the present occasion, and to constitute a Special Committee to confer with the builders. But the Practice Committee was elected by the general body; and if there was a question which that Committee should discuss he ventured to think it was such a question as this. Judging from his own practice, he said most emphatically that this clause would be most detrimental not only to the interests of architects, but also to those of the public, because instead of having one architect on a job they would have two; and the expenses entailed in continually debating every trivial circumstance would be something considerable. He had been on several arbitrations as a witness, and had been astonished at the time wasted, first by one side and then by the other discussing the value of mere items. Money was spent beyond all comparison with the question at issue, whereas if it was left to the architect the whole responsibility was on his hands, and if he did anything absolutely wrong he ought to be brought to book for it; but if they divested him of his responsibility the client would undoubtedly find himself involved in all kind of difficulties. He would have the arbitrator one day and the architect the next, and the builder would be playing all sorts of games in the meantime. As a matter of fact, it was only with the sharp builder, the commercial gentleman who scarcely knew anything about the trade at all other than what would pay, that they had all the trouble—not the good old-fashioned builder, or the builder working on the good old-fashioned lines, who did his utmost to give the best value for the money. There were a great many persons who looked upon an architect as a luxury, and if they could possibly carry out a building without his assistance they did so; and if countenance to this notion was given by introducing unduly the official arbitrator, thus continually creating friction, he thought it would be very detrimental to the public and also to the profession, and from that point of view also he should oppose it.

Mr. HUDSON asked to be allowed to call attention to another point about Clause 1 which was affected by Clause 32 to a considerable degree—viz., with regard to the builder calling attention to the fact that the further drawings or details involved more work than was contemplated by the contract. It would be interesting to know what was the practice of her Majesty's Office of Works with regard to those drawings: whether there was such a clause in their contracts, and, if so, whether it was open to the contractor to question the decision of the architect, if he were allowed to decide in the first instance whether there was any extra or not; and whether, if that was done, the architect had any appeal to arbitration under the old Act and its statutory modification.

Mr. HENRY TANNER [*F.*], of H.M. Office of Works, said that on that point he thought the only question for arbitration was one of money. The architect settled those things, and if he considered it a proper thing to be done under the contract, it was done, and the builder could bring his claim at the end of the contract.

Mr. T. M. RICKMAN [*A.*] said he had for a number of years taken a great interest in this subject, and he understood that the only open question between the Institute of Builders and the Royal Institute of British Architects was as to whether there should be an arbitration, if necessary, in the course of the contract. When he read the substituted clauses that were proposed by the Council, and when he gathered from the notice-paper that those clauses had been actually agreed to by the Builders, he was greatly rejoiced, because, though the clauses as they at present stand were about as cumbrous as they could be drawn, he thought that they did carry out some method of adjusting the difficulty between the architects and the builders with regard to this much-disputed question as to whether there should be an arbitration in the course of the work. One great difficulty there had been in the use of the Conditions of Contract was this, that, though they might get a perfect set of Conditions, each case had to have the Conditions to a certain extent varied in order to suit the particular circumstances of the contract; and in settling and in signing and completing a contract based on the Conditions put forward by the Institute of Architects there had not been the care taken to alter such clauses as were necessary in order to make the contract exactly suitable to the building that was to be erected and the circumstances under which it was to be carried out. There had been a variety of cases before himself as arbitrator in which he had found that great difficulties had arisen because the various blanks in the Conditions of Contract had not been properly filled in and the circumstances of the case had not been considered. In an ordinary contract he doubted whether it was ever necessary to have an arbitration in the course of the work. In the case of a large contract it was of great importance that there should be an arbitration if the necessity for it occurred. To prevent either the contractor or the client through his architect from having an arbitration which would settle some important question as it went on, would, he thought, be a very great mistake, and he could not understand the objection so many architects had to the proposition that there should be, if necessary, an arbitration in the course of the work. It seemed to him that the machinery devised by these substituted clauses which the Council had proposed was very good, though, he thought, it was very cumbrous. If these Conditions as altered were actually agreed to by both architects and builders it would be very desirable indeed for the Institute to accept them. [Various members: No, no.] But he was surprised that they should have been agreed to by the architects, knowing, as he did, the strong feeling that existed on the part of many now present and others that he knew; and he was also surprised that they had been agreed to by the builders; but as he thought the arrangement proposed was a reasonable one for carrying out an adjustment of the difficulty between the two parties, he was very pleased to find that such a thing had been proposed. As regards the form of the Arbitration Clause, and dealing with these excepted Clauses 4, 9, and 19 which were put in brackets, he thought it was an unfortunate method of treating them. It would be far better to omit the exception of those clauses and the words within brackets and to transfer such exception altogether to the end of the Arbitration Clause. That, however, was a mere matter of form. He had hoped that the Council of the Institute would have come forward with an explanation of the circumstances and of the arguments which had brought about the proposition which he thought was going to be placed before them. As the proposition had been withdrawn with regard to the Arbitration Clause, he felt that it would not be reasonable to enter into detailed criticism of that clause until they knew what the Council proposed to put before them, and until they could be absolutely certain that if they agreed to it the builders would adopt it.

The CHAIRMAN stated that the builders had agreed to the clauses as put forward.

Mr. RICKMAN hoped that when the Council again brought up the revised Conditions they would put forward

the reasons that had prevailed with them and with the builders.

Mr. Rowland Plumbe [*F.*] thought that the revision of Clause 32 as put forward was an unreasonable revision, and for this reason: They had a Building Agreement that had been prepared with the greatest care, and which had been adopted after years of hard work. It was an Agreement which was accepted, he might say, so far as he knew, by the whole of the profession; and it was accepted by the whole of the building trade, except by those gentlemen who happened to be high in office in the Builders' Institute, who could not reasonably do so; and he thought it was an open secret that even some of these gentlemen had not objected to sign the contract which the Institute had sanctioned, with some slight alterations. He was convinced that if this revised edition of Clause 32 were passed it would lead to a policy of obstruction and delay. An architect could not consent to have an arbitrator coming on his works every week at the instance of a litigious builder, to raise questions which would result in the building never being finished, and in the building costing a fabulous sum of money. Then again, as other members had said, this revision would take away the proper position of the architect. The architect was paid for superintending the work and for taking the responsibility. If he were going to call in an arbitrator at every stage of the work, he would become a mere puppet, and would be paid for work which he was not doing. Such a state of things would be distinctly detrimental to the interests of the profession. He could claim a long standing as a member of the Institute, going on to nearly forty years, and during that time he had had the privilege of carrying out a considerable amount of work; and he could only say that if this revision were accepted, it would be thoroughly bad practice and against all precedent. In his opinion and experience the revision was altogether unnecessary. The present Form of Contract worked well, and they were willing to abide by it. He hoped that whatever happened the Council would carefully reconsider this matter, because he felt sure that the profession at large were against it. By the profession at large he meant the profession of practising architects who experienced the present difficulties of carrying out buildings, and who had no desire to add to them. The proposed revision would play into the hands of a class of men whom he would call unworthy litigious financiers; men who were not builders at all; men who knew nothing about building; men who simply came in with a certain amount of money, posed as builders, and employed a large number of men in their offices, such as surveyors, managers, prime cost clerks, and ledger-clerks, &c., and whose object was to obstruct and to do all they could to upset the contract, and, if they could manage it, to rake in as much profit as they could out of the disorder and muddle. This new clause would not help the really good builder, whom they all respected and admired and regarded, and worked with; but it would help the other class of man whom they did not want to help. He should like to be allowed to make one recommendation. He would suggest that the Council should draw up a short form and send it round to members of the Institute, asking them to record their opinion as to the benefit of, or as to their objection to, this clause. If this were done, the hands of the Council would be greatly strengthened, because he was sure the Council would never attempt to do anything that was adverse to the general opinion of their members.

The Chairman said he would bring Mr. Plumbe's suggestion before the next meeting of the Council.

Mr. Rowland Plumbe, continuing, said he should like to add a word of warning. He believed that the majority of practising architects would never use this form if it were brought out. Architects would ignore it altogether, and he begged the Council not to place themselves in such a position as that. Members were quite satisfied with the old form. He had come prepared to submit a motion, but as under the circumstances that would be out of order, he would ask permission to read it, so that the Council might take it into consideration. It was as follows: "That this meeting does not approve of the proposed revision of Clause 32 of the existing form of contract used by the Royal Institute of British Architects, and urges the President and Council to continue to use the clause as now existing in its entirety."

Mr. C. H. Brodie [*A.*] hoped that although the meeting might succeed in overthrowing Clause 32, it would not succeed in overthrowing the valuable amendments of some of the other clauses. There was one he noticed particularly, because it had been brought before the Practice Committee very specially, i.e. that the present Conditions of Contract did not force the contractor to carry out any works at all. The new clause had amended that, and it was desirable that it should not be lost sight of.

Mr. J. Osborne Smith [*F.*] observed that the discussion on Clause 32 pointed to a weakness in the consideration of these questions by architects at all. They had prepared a form of contract, and it had been in circulation for a long time, yet, when it came to practical use, it was found in a most important particular to be utterly useless. The provision referred to by Mr. Brodie had never been omitted from any contract he had had to do with; and he had been much surprised at the case brought before the Practice Committee, where a man had used the Institute form of contract, and had found himself in difficulties in consequence. That case, together with what had transpired at the meeting that evening, pointed to the fact that it was unwise for architects to attempt to do lawyers' work. They might afford the lawyers some guidance, but they could not themselves formulate a set of conditions which would fit all cases. He agreed with the remark of Mr. Rickman, that every contract, no matter what the form, required to be amended and adapted to suit the particular circumstances of each case. It would, he thought, be a serious infringement of their rights as individual members if the Council were to stamp with their mark a hard-and-fast form of contract, set forth as adapted to suit all conditions and cases. He had in mind many cases where it would be extremely unsuitable. In fact that very day its unfairness had been pointed out to him. When he had asked a builder to sign a contract, he said, "Yes, I will sign this, because it is fairer than the printed form."

Mr. Woodward pointed out that there was no obligation to use those conditions at all. Personally he never used them. He had his own reprinted.

Mr. H. Hardwicke Langston [*A.*], referring to the last part of Clause 17, said it seemed to him that the contractor ought to be defended against himself. The provision was: "Should any defective work have been done or material supplied by any sub-contractor employed on the works who has been nominated or approved by the architect, the contractor shall be liable to make good in the same manner as if such work or material had been done or supplied by the contractor." Could they as sensible men admit that it was fair to the contractor to be bound down under such a manifest absurdity? The sub-contractor ought to be responsible to the employer, the man who had to pay for the work, and to the architect who ordered it to be done.

The Chairman replied that it was not an absurdity, nor was there anything wrong about such a provision. The builder, with his own consent, employed a specialist, and he received the profit on that specialist's work.

The discussion concluded, the Chairman said that he was sure the Council would take into serious consideration everything that had been said at the meeting that evening. They would then come before the General Body again, either to uphold this proposition or to substitute another one.

A NEW SYSTEM OF PRACTICAL PERSPECTIVE FOR ARTISTS AND ARCHITECTS.

By Cav. Settimio Giampietri [*Hon.Corr.M., Rome*].

THE object of the present treatise is to provide artists with short and practical rules for drawing the apparent form of objects.

By the rule which I propose there is no need of either plan or elevation of the object to be drawn, and the whole operation can be worked out within the space of the paper or canvas, if to the right and left of the canvas two laths, or similar appliance, be fixed at the height of the horizontal line, to carry those points to which certain given lines tend.

The treatise being written for those who have already some little knowledge of the subject, I pass over the principles and nomenclature of perspective in order to avoid unnecessary repetition.

*Plate I.**

The spectator determines the height at which he is to stand, the distance between himself and the object or objects at which he is to look, and the direction of his glance. He can place himself at a greater or lesser distance, but the distance must always be greater than the vertical or horizontal dimensions of the object, so that his glance can take it all in. Finally, he can direct his visual ray to any point of the object at which he is looking; but, for certain æsthetic reasons, this point will always be found at the height of his eye, so that the movement of the eye will be in a horizontal direction only—that is, to the right and left—and not up and down. If it were otherwise the vertical lines would extend to a point above the horizon if the eye were directed to a point *above* the natural horizon, and to a point *below* if it were directed below the horizon.

This being granted, we can fix at pleasure the height of the horizon, the distance, and direction of the eye, which must be able to take in conveniently the whole of the object; wherefore the eye must be directed towards it, the horizon not too far removed, and the eye must always be at a greater distance than the greatest dimension of the object which is to be drawn. These three data are the starting-points of all the movements which the lines can make in their apparent positions.

The right angle contained by two lines drawn through the foot of the spectator in the horizontal plane, and which meet upon the vertical brought down from his eye, although invisible to him, would appear as a right angle—that is, if the direction of his glance is perpendicular to its plane, i.e. if the point of sight is situated on the natural horizon. Wherefore if, in order to see it, he steps back without altering the direction of his eye, the angle takes a form apparently greater than the right angle; and the further he recedes the more the angle opens, till its two arms gradually coincide with the line of the horizon, both because of the distance and of his position.

From this may be deduced that the greater or lesser apparent opening of the right angle is relative to the distance at which it is seen and to its position with regard to the horizon. This angle can therefore be taken at pleasure in its apparent form, more or less open, and thus its two sides may be more or less inclined towards the horizon. From this apparent or perspective angle we shall, after fixing the height of the horizon and the direction of the eye or point of sight, find the *distance*, the *diagonal* point, two *geometrical* points, and two *vanishing* points.

Working: Plate I.—Let the line A B represent the horizon. On it fix the point of sight C. Then above (or below) the horizon draw the perspective angle G D H, whose sides produced to the horizon will give the two vanishing points E, F. Draw G H parallel to the horizon A B, intersecting the two sides of the perspective angle at the points G, H.

Join the points D, C, cutting G H in I. Bisect G H at the point L, and, with centre L and radius L G, describe the semicircle G M H, of which G H is the diameter. At the point I draw I M perpendicular to G H, and cutting the semicircle G M H at M. Join M H, M G, and the right angle G M H will be the geometric of the perspective G D H. Bisect the right angle G M H by the line M N, cutting G H at the point N. Take any point e on M N, and take any points a and b on the lines M G, M H equidistant from M. With centre H and radius H M describe the arc M O, cutting G H in O. With centre G and radius G M describe the arc M P, cutting G H at P. Finally, join D P, D N, D O, and produce them to meet the horizontal line A B at G″ D′ G′, giving the diagonal point D′ and the two geometrical points G′, G″. Some of these points will form the starting-point of the visual lines, and others will have the property of determining the foreshortening.

Plate II.

By the process carried out on Plate I. we observe:

First, that (Plate II.) the triangle $a\,d\,c$ is similar to the triangle Q d B.

* The plates are given in numerical order at the end o the text.

Secondly, that the geometric triangle *a b c* is similar to the other geometric Q M B, having the bases and sides parallel each to each.

Thirdly, that the two triangles Q*d*B and Q M B have the base Q B common to each.

Placing the point of sight at O, O M would be the distance; but, this being greater than the picture, the point M would be out of the picture, and the working is therefore impracticable, which, if carried out at that distance, would give us the two vanishing points Q, B and the two geometric points G′, G and the diagonal point D. These points can be found equally well by working on the apparent angle *a d c*, as we have the same result as if we work on the angle Q A B.

The triangle H A C is similar to the triangle G′A B, having their bases parallel and sides common; but B G′, B A being radii of the same circle, therefore G′B : H C :: B A : A C; therefore H C=A C. Draw C P parallel to H A, and A P parallel to H C, and N F equal and parallel to A P, also E I parallel to F N and meeting N G′ at I. But A C is equal to H C, and therefore A P and F N are equal to A C.

And, as in perspective all parallel lines which are not parallel to the horizon will meet on it at the same point, and, *vice versâ*, all straight lines which in perspective meet at the same point on the horizon are geometrically parallel, Q A is parallel to Q N, A B is parallel to N B, and A G′ is parallel to N G′ and F G′. Therefore A C is parallel to N E; and I E, N F, parallels bounded by parallels, are equal, and are parallel to H C, A P. Therefore I E is equal to H C, and the triangles I E N, H C A are similar; therefore they are equal; therefore E N is equal to A C.

Both the theory and practice of this rule are better shown in Plate XVII.

Plate III.

I have deduced from the works of Fontana the rule worked out in the present figure, drawn in chain lines beneath the horizon, though he himself never made use of the properties which he had almost entirely discovered.

If the line A B represent the ground-line, or lower edge of the picture, the geometric square situated beneath that line will be out of the picture, and therefore not on the superficies which the artist has to work upon. The other figure, drawn in lines and placed above the horizon, I have deduced from various authors, but without the geometric points. The distance is represented by O C, greater than the picture, and therefore the point C, the centre of the operation, is necessarily out of the picture.

I will not repeat the working of the dotted figure E H F, because it has already been indicated on Plate I., but consider it here as already constructed.

Working: Plate III.—From the point of sight O raise the indefinite perpendicular O C. Bisect equally P P′ at I, and at the centre I and radius I P draw the arc *a b*, cutting the perpendicular raised on O at the point C. Join C P, C P′, and we have the right angle P C P′. Bisect equally this right angle by the line C D, cutting P P′, and we have the diagonal at D. At the centre P and radius P C describe the arc C G′, cutting P P′ at G′, fixing the geometric point G′. At the centre P′ and radius P′C describe the arc C G, cutting P P′ in G, the second geometrical point.

As we see, these points coincide exactly with those already found with the figure E H F.

To proceed to the working of the other figure, traced in chain-lines below the horizon. At any point L on the ground-line A B draw L M parallel to P′ C, and on the other side draw the side of the square L N parallel to P C. Complete the square L M Q N. Join L P and L P′. From the points N Q M draw the perpendiculars to the ground-line N R, Q S, M T. Join R O, S O, T O. Intersect P L in V and P′ L at U. Join V P′, U P, forming the other point of intersection X, completing the perspective square drawn from the geometric below. Now, to find the point of the diagonal, draw the line L X, which, being produced to the horizon, will give the point D. Then, to find the two geometric points, at the centre L and a radius equal to the side of the geometric square L M, describe the arc M Z, cutting L B in Z; and from the same centre and at the same radius describe the arc N Y, cutting L A in Y. Join Z U, producing Z U to the horizon, and we have the geometric point G. In the same way, join Y V to the horizon, and we have the other geometric point G′.

The same points being obtained by this rule also, it is demonstrated as far as needful.

Plate IV.

In order to draw the apparent form of objects the student must become perfectly acquainted with their real form, and in working they must be considered as transparent, or as if made of glass, in order to account for the parts which are hidden by their opaque volume. As objects show only their superficies we begin by finding their apparent form; therefore, on account of its suitability for our study, we will take the quadrilateral, or figure contained by four sides, perpendicular to each other, and forming four right angles, which in geometry is termed a square.

Working.—Let A B be the height of the horizon determined at will. Determine also the point of sight as at O, and the inclination of the angle E C F. Produce C E, C F to the horizon to find the two vanishing points P P′. Now place the

vertex of the apparent angle at any point above the horizon, and let its sides meet the horizon in the points P P′; then continue the process indicated on Plate I., and there clearly described, to find the other points G D G′. Through the vertex C draw a parallel to the horizon; on it, starting from C towards the left, mark the geometrical side of the square C *a*. Draw a construction line from *a* to G′, cutting C P at E, whence draw the visual line E P′. Then from C draw the diagonal C D, cutting E P′ at H. Through H draw the visual P F, completing the square in perspective, or as it appears to us.

Now let us suppose that this square is subdivided into four small squares, four rectangles, and a greater square in the centre.

Let us observe that the greater sides of the rectangle are common to the sides of the great square, and the lesser sides are common to those of the small squares. Take the geometrical side of one of the small squares, and mark its length from C 1 and *a* 2. Join 1 G′ and 2 G′, cutting C P in 3 and 4. Join 3 P′, 4 P′, cutting the diagonal at 5 and 6. Join 5 P, 6 P and produce P 5, P 6, cutting C P′ at 7 and 8, completing the figure. Observe that the same result will be obtained by using the geometrical point G. Carry the dimensions C 1 to C 1′, 1 and 2 to 1′ 2′, 2 and *a*, to 2′ *a*′. From these points carry the straight lines to G, *a*′ F, 2′ 7, and 1′ 8 to G, which, as may be seen, will give the same result. Either of the geometrical points may therefore be used. Lastly, it may be observed that in this figure the angle P C P′ not being very large, little greater than a right angle, the perspective form of the figure appears too near, because the nearer the angle is to a right angle, the less is the distance at which it is seen.

Plate V.

The perspective called parallel (by which the masterpieces of the Cinque Cento are drawn) is simply one of the cases of the rule which I am expounding, and occurs when the point of sight O is exactly between the two vanishing points P P′, and is then consequently identical with the diagonal point D.

Working.—The inclination of the perspective angle P A P′ being fixed as wished, bisect equally the horizon P P′ at O. Join O A. Draw B C parallel to the horizon; continue the process indicated in Plate I. to find the other points, and the diagonal D will be found at the same point as the point of sight O. Now having determined the position of the point *a*, draw the visual lines *a* P, *a* P′; draw an indefinite straight line *f b* passing through *a*, and parallel to the horizon, and mark on it the geometrical side of the square *a* 1. Draw 1 G, cutting the visual *a* P′ at *c*. From C draw the visual *c* P. Draw the diagonal *a* D, cutting *c* P at *d*, and through *d* draw the visual *d* P, cutting *a* P at *e*, and thus completing the square *a c d e*.

Now from O draw O *f* passing through *e* and O *i* passing through *c*. Through the points *a* and *d* draw *f i*, *g h*, parallel to the horizon, and we shall have the square *f i g h*. And its sides being equally bisected form other four squares together equivalent to the great square, and considering these squares thus formed, *a i c l*, *c h d l*, *l d g e*, and *a l e f*, we see that they have their point of sight and vanishing point at O, and their diagonals *a c*, *a e*, *e d*, *c d* directed to the points P P′. Therefore we have the parallel perspective with the vanishing point at O, and the distance carried on to the horizon from O to P and P′. As may be seen, this is only one case of the general rule which I am explaining. Now from the centre O at the radius O P describe the semicircle P F P′, and draw O F perpendicular to P P′. Join F P, F P′, and we shall have the geometrical right angle P F P′ of the perspective P A P′; its geometric distance being D F, equal to the geometric distance D P, regarding D as the vanishing point in parallel perspective. Notice also that D F is equal to D P as P F is equal to P G′.

To complete the figure produce the visual P *c* to meet *f b* at *m*. Mark the geometric side *a* 1 at *m* 2; draw the visual *m* P′. Join 2 G, cutting *e n* at *n*. Draw the diagonal *m* D. Draw the visual to P, cutting *m* D at *o* and completing the square *m n o c*; make *i p* equal to *i f*. Draw *p* O, and produce *g h* to give the other square *i p q h* equal to the first.

Plate VI.

In this plate is given the figure of a stellated polygon, in which, besides the square, we have in perspective the octagon, the stellated polygon, and some lines of circumvallation, which enclose the figure. The geometric figure B is given, the problem for its construction being indicated.

A single geometrical section of it, such as the figure C, is sufficient to give all the necessary geometrical dimensions. In fact we have the projection of the side of the octagon *a b* in the figure C at 4 5, and the side *b c* in the diagonal 4 4′. The spaces between the lines of circumvallation are simple spaces between 1, 2, 3, and 4.

Working.—Determine the height of the horizon and the point of sight O, also the position and size of the angle H A E; produce A H, A E to the horizon to determine the two vanishing points P and P′. From these points continue the process indicated (effacing the unnecessary construction lines) and the diagonal D and two geometrical points G G′ will be obtained.

At the vertex A of the angle H A E draw a line

of construction parallel to the horizon. On it set off A 5′, the side of the square 4 5, fig. C; then set off on the same line 5′ 4‴ the length of the diagonal 4 4′, then repeat the side 4 5 at 4‴ 5″. From the points 5′ 4‴ 5″ draw construction lines to G, cutting the visual A P′ at the points 6, 7, and 8. From these points draw faint visual lines to P. Draw the diagonal A D and we have the points of intersection *i h f*, whence draw the other visual lines to P′, completing the figure A 8 1 *k*. Now on examining the figure B we see clearly that the salient angles are formed by producing the sides of the octagon. Let the octagon therefore be completed by drawing the diagonals of the four squares placed at the angles, which diagonals, if produced till they meet, will give the figure B in perspective. Draw the remaining diagonal in the centre square, and we have the central point *g*, which is the point of concurrence of all the faint rays, which start from the salient and interior angles in the perimeter of the figure; as, for example, the line *l*, which passes through the central point *g*. Next mark the spaces of the figure C 1, 2, 3, 4 on the line A, 1′ 2′ 3′ 4′. Join these points to the geometrical point G and produce these lines till they meet the prolongation of the visual line A E, and through the points of intersection draw the visual lines to the points P P′ and the diagonals (of which one goes to D and the other is found by completing the interrupted line of the perimeter) between the rays which concur at the centre on which the angles of conjunction are outlined.

This is rendered still more easy by observing the direction of the perimetral line of the stellated polygon to which the lines of circumvallation run parallel.

Plate VII.

The last figure serves to some extent as a ground plan for the present one, the solid construction here given being raised on a similar polygon.

By patient analysis it will be found that this method is easier than that of the authors who put forward a separate rule for each case, while we give one rule for everything. The working of this rule will be clearer if we impress on our minds that where one straight line meets the horizon, all the other lines which are geometrically parallel to that line will concur in the same point on the horizon.

Working.—Fix the height of the horizon and the point of sight, O. Determine also the angle P A P′ by which the other required points may be found as before. Through the vertex A draw the indefinite horizontal A B. From the same point A raise the indefinite straight line A C perpendicular to A B, and to the horizon. On A B mark the geometrical measurements 1 and 2 from A to 1′, 1 and 3 from 1′ to 2′, and repeat 1 2 from 2′ to 3′.

On the perpendicular mark the geometrical height of the single bodies superposed at 4, 5, and C above the point A, and at 7 below that point.

Careful attention must be paid to the dotted lines, which are here given in full, but of which in future only the intersections will be marked, so as not to repeat what has been already shown. Therefore from the points 1′ 2′ 3′ draw construction lines to G, intersecting the visual A P′ in the points *a*, *b*, *c*. Draw lines from these points to the vanishing point P, and draw the diagonal A D, and we have the points of intersection *n*, *p*, *d*. Through these points draw the visual lines *f*, *l*, *m*, *k*, *c*, *d*, concurring in the point P′. Draw the diagonal *e c*; do the same with the others, *f a*, *i k*, *b l*, *m h*, producing them to meet the rays which start from the centre E, and passing through the salient and interior angles of the perimeter, as at E H, and we have the plan complete in dotted lines.

The dimensions A 8 being fixed as desired, join G 8 and produce G 8 to meet the continuation of the visual P′A. Through their intersection draw the visual 9 P, which turning between the rays will give the perimeter of the solid stellated figure placed here as a base. Through 9 draw an indefinite perpendicular, on which, from the point D, mark the height A 7, and repeat the process with regard to all the perpendiculars drawn from the salient and inner angles. From the points *a*, *b*, *l*, *k*, *i*, *h*, *m*, *f* raise indefinite perpendiculars; from 4 draw a visual line to P′, cutting the perpendicular drawn from *a b* at *a′ b′*; draw the diagonal 4 D, and visual lines from 4, *a′*, *b′* to P, and the octagon which determines the upper end of the prism will easily be constructed. From the centre E raise the indefinite perpendicular axis E F. Draw indefinite perpendiculars also from the points *n′ o′ p′ q′* on the perpendiculars starting from the points *n o p q* at the base. Draw the diagonal 5 D, cutting the perpendicular raised on *n′* at the point *n″*. From thence draw visual lines to P P′, cutting the perpendiculars on *o′ q′* in the points *o″ q″* and completing the quadrangular prism.

To construct the superposed pyramid draw from 5 *a* visual to P′, intersecting at *a″* the perpendicular raised from the point *a* of the ground plan.

The base of the pyramid being exactly equal to that of the octagonal prism below, the perpendicular of this prism, if produced, will determine the angles of the base of the pyramid, and the sides will run to the same points where the sides of the two base lines of the prism ended.

To find the height of the apex draw the diagonal C D, cutting the axis E F at *x*. From *x* draw *x b″*, *x a″*, *x f″*, *x m″*, and the figure will be complete.

Plate VIII.

The greater the distance between us and the object at which we look, the greater will be the distance between the two vanishing points P P″, and thus one or other, and sometimes both, of these points would be found out of the picture. In this plate the point P would be found out of the picture. If we observe fig. 1 we see that it is sufficient to fix on the margin of the picture one or two narrow pieces of wood, and to continue on them the line of the horizon P P″, and the side of the perspective angle A P, in order to find the vanishing point P.

When the perspective drawing is finished, the pieces of wood can be removed. This simple method is more practical and more convenient than any other geometrical or mechanical means. Some of the other points may chance to fall upon this continuation of the horizontal line.

Fig. 3 shows the plan of the drawing in perspective fig. 2.

Working.—Determine the angle P A P′, the height of the horizon, and the point of sight O, and find the other points D G G′. Through the vertex A of the angle draw A B parallel to the horizon, and on it raise the perpendicular A C. On A B mark the geometrical measurements of the steps A–1, 1–2, and the projection of the base member 2–3. Also half the width of the parallelopiped terminating in a semi-disc, 3–4; also 4–5 equal to 4 A, half the total breadth. On the vertical A C mark the several geometric heights, 6, 7, 8, 9, 10, 11, 12. Carry the dimensions marked on A B (1, 2, 3, 4, 5) to the visual A P B by means of the point G′. Draw the diagonal A D, and by drawing lines from the points A P to P′, the intersections 1′, 2′, 3′, 4′ will be found. From 4′ draw a diagonal to 5′, and draw lines from the points 1′, 2′, 3′ to P, intersecting the diagonal 4′ 5′ at 1″, 2″, 3″. From each of these points of intersection draw invisible indefinite perpendiculars, which, as will be seen, will give the heights of the corners. Then the visual drawn from 6 to P will meet the perpendicular raised on the point 5′, and will give the corner 5″. The visual drawn from 6 to P′ will meet the perpendicular 2‴ 3‴ raised on 2‴ (which point is obtained by the continuation of the line through 2″, supposing the width A2‴ is equal to A2); draw the straight line 6 6′ towards D, meeting the perpendicular raised on 1′ at the point 6′, from which draw a visual to P, meeting the perpendicular raised on 1″, and a visual to P′, which will meet the line drawn from 3‴ to D at the point 6″, and so on. Then as 4–3 would be the geometrical half of the perspective width *a d*, make 10, 12 equal to 4–3, and at the centre 10 and distance 10, 12 describe the quadrant, and bisect it equally in *e*; join *e*–11, and draw straight lines to D from 10, 11, 12, cutting the perpendicular 3′ at *a*, *f*, *b*. From these points draw the visuals *b c*, *f g*, *a d*; from the point *o* raise a perpendicular intersecting *a d* and *b c* in the points *h*, *l*. Join *h b*, *h c* intersecting *f g* in *m n*, through which points draw the semicircular curve in freehand.

To draw the second similar figure, repeat the diagonal H Q, from Q the visual Q S, and thence the other diagonal, which gives the visual R and the diagonal R Q. The rest is self-evident, the remaining dimensions being given by producing those of the first constructed figure.

Plate IX.

In order to draw a circle in its apparent form, whatever its position, it must be considered as inscribed in a square, in which the axis and diagonals must be drawn; then let it be observed that the curve of the circle cuts the diagonals and touches the points of the axis of the square, thus establishing eight points, as in fig. 1, at 2, 10, 9, 8, 7, 6, 5, 11; therefore the apparent position of these points must be found, and the curve of the circle drawn through them by freehand.

Working.—From the point A [fig. 1] draw the two visuals A P, A P′, and A B parallel to the horizon. Fix the radius of the circle A C, and describe the semicircle A E M; bisect it equally in E and bisect equally the right angles formed at the centre, and produce the bisecting lines to meet the circumference, the line of bisection C F cutting the circumference at the point F. Project a perpendicular from the point F, meeting A B in H. Repeat the distance A H C from C at C L M, and mark these measurements on the visual A P by drawing lines from the points H C L M towards G′, meeting A P at 1, 2, 3, 4. Draw the diagonal A D, and draw lines from the points 1, 2, 3, 4 to P′. Through the points of intersection on the diagonal draw visuals to P, and the points 2, 11, 5, 6, 7, 8, 9, 10 will be obtained.

Through these points draw the freehand curve. Now, considering the circle as the base of a cylinder whose height is equal to the diameter of the base, in order to obtain the apparent form mark the geometric diameter A M on the perpendicular A N; from N draw two visuals to P P′ and on N P by means of perpendiculars; from the points 1, 2, 3, 4 find the points 1′, 2′, 3′, 4′. By repeating the former process from these points the surbase of the cylinder may be found. To complete the figure join the two extremities of the perspective circles by perpendiculars.

To draw a second cylinder of the same dimensions as the first, and lying on the horizontal plane, determine the geometrical distance from M to B. Draw a line from B towards G′, cutting A P in C [fig. 2]; from C draw a visual to P′, cutting

the visuals produced from 2, 11, 5, 6, 7 in fig. 1. Then, from the same point C, raise a perpendicular. Draw a line from N towards P, cutting the perpendicular on C at E, thus marking the height of A N at C E. From E draw the visuals E P, E P′; raise perpendiculars on the points of intersection of this diagonal, with the verticals to find the points through which the curve of the circle is to be drawn. The apparent length of the cylinder C H may be determined by means of diagonals starting from C, or by repeating it geometrically to the left of B, and foreshortening it from the point G′. The second circle being drawn, the cylinder is completed by joining the two extremities by visual lines, which naturally concur at P. If you want to draw a similar cylinder on the other side, draw lines from H and C towards P′, cutting the diagonal A D in H′ and C′. Through these points draw lines from P, cutting A P′ in C″ and H″ [fig. 3]; the height is found on the perpendicular raised on C″ at its point of intersection with N P′. The process of finding all the necessary points is now easy if the figure be carefully examined, as it resembles the former one. Other methods of putting the circle in perspective can also be used. I give one in this plate, above the horizon, and for that reason the circle appears as seen from below. The curve is more perfect from having a greater number of points through which it is drawn; and as with the faint lines it takes a certain geometrical form, the whole figure is put in perspective by a very simple process. All the other lines would, of course, be considered as lines of construction where the circle only is required.

The geometric or real figure is given in fig. 4, in which the circle *h e g f* is given, and the square *d a b c* is described about it, and all the diagonals here shown are drawn. The points 1 and 2, marked by the intersection of two diagonals, would give the required dimensions; but a similar quarter of this figure will suffice, and this I place beneath A *c* [fig. 5] to supply the geometrical measurements required for putting the whole in perspective. The horizon being already fixed, the point of sight, and the distance (the latter being determined by the angle P A P′ [fig. 1]), take any point A through which from P draw A *b′*, and from P′ draw A C; draw the diagonal D A B. From the same point A draw A *c* parallel to the horizon. On this line mark the geometrical side of the square described about the circle, and let A *c* be bisected equally in *d*; on *d c* construct the quarter similar to fig. 4, and project perpendiculars from the points 1, 2 to 1′, 2′ on the line A *c*. From G′ draw lines through the points *d*, 1, 2, *c* to the visual A *b′*; through the points of intersection on A *b′* draw lines from P′, cutting the diagonals *d′ b′* and *d′* B. Draw the other diagonal C *b′*, and draw lines from P through the intersections of *d′* B to *c′ d′*, and through those on *d′ b′* to *d′* A. Draw the other axis E *c′* passing through *d′*. Draw the diagonals B E, B *a′*, F *b′*, F A, C *c′*, C *a′*, E *b′*, A *c′*; and through their intersections draw the freehand curve, to complete the required figure.

Plate X.

Richness of architectural detail, though it may display the talent of the designer, is not desirable when it is necessary to illustrate clearly a rule of perspective. The numerous lines of an elaborate drawing, all tending to the same point, are apt to bring more confusion than clearness to the mind of the student, which would not be the case with the fewer lines of a less complicated design, for which reason three simple pedestals are here given.

Working.—Given the height of the horizon, the apparent angle P A P′ and the point of sight O, all the required points may be found on the horizon as we know. Through A draw A B parallel to the horizon; mark on it the total width of the pedestal, and the projections of the base moulding, as also of its summit, 1, 2, *a*, 3, 4, and observe that the projection *a* belongs to the base alone, and the others are either common or belong to the cap only. Draw lines from these points towards G′, cutting the visual P A. Draw the diagonal A D, and draw lines from the points of intersection on A P towards P′, cutting the diagonal A D. The point *f* being thus found, through it draw the visual F *f* and the square A F *f* E is found. Draw the diagonal F E: on it mark the apparent proportions of the projections, by means of the visuals.

On the point A raise the indefinite perpendicular A C; on it mark the separate geometrical heights 5, 6, 7, 8, 9, 10, 11. Draw lines from these points to D, meeting the perpendiculars raised on the points of intersection on the diagonals A *f*, E F, and these meeting points will give the outlines by which the figure may easily be completed.

Then, if a row of pedestals be required (the distance between them being fixed, say, at one and a half the total width of one of the pedestals), from the point E draw the diagonal E H. Through H draw the visual H I. Having drawn from the centre *o* the visual *o* I, draw the diagonal I K. Through K draw the visual K L, meeting P A in the point L. From L draw the diagonal to D, and the ground plan of the square will easily be marked by means of visuals from the first pedestal, the same method being used for the heights.

Otherwise (and this will serve as a proof), mark on A B, to the left of the point 1, one and a half the total width of the pedestal, 13; a line drawn through this point to G′ will cut P A in the same point L. For the third and any subsequent pedestal repeat the same process. The rest is clear.

Plate XI.

From the geometrical idea of the profile of a cornice, placed on one side of Plate XI., it is clearly seen that the process for finding its perspective form is the same as that hitherto used. In fact, the plate is turned upside down, so that the line A b' is found below the horizon, and the cornice is seen reversed, its perspective form having been found by the same process as that employed in the preceding plates (and in this position it serves also as a model for the construction of a base). From this the method of putting objects placed above the horizon into perspective will easily be understood.

Therefore, when the rule, already explained and demonstrated, for finding the points on the horizon is understood, the rest is only a fairly simple system of construction by deducing what is required from what is already known; that is, one point helps to find another, and from points proceeding to lines and to planes, the power of representing the apparent form of bodies is easily acquired.

Working.—Through the vertex A of the angle, draw A b' parallel to the horizon, and mark on it the projection 1 a at 1′–a'', and the shaft $a\,b$ at $a''\,b'$, with the projection of the architrave $a'\,c$ at $a''\,c'$. From these points draw lines towards the geometric G, meeting the visual A P′. Draw the diagonal A D, and from the points of intersection on A P′ draw lines towards P, cutting A D in M D F. Draw the visual $f\,g$, and the other $d\,i$; draw a diagonal from g, and the point h will be found. Through h draw the visual $i\,k$; draw the visuals $d\,l$, $k\,l$, and the square of the shaft is found. Through the square and passing through f draw a diagonal, which being produced will give the points C B, and from f, d, l, k, i draw indefinite perpendiculars. Now if we draw 1-K in the geometric profile, we shall see that this line touches all the mouldings of the cornice, and K being on the axis of the shaft, and its height b K corresponding to 1–11; mark this measurement on the perpendicular drawn from A, 1′–11′; draw a diagonal from 11′, and the point K′ will be found, to which the invisible lines C F, A H, B E are drawn. Then mark the individual geometric heights 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, on the perpendicular drawn from A–1′, 2′, 3′, 4′, 5′, 6′, 7′, 8′, 9′, 10′, 12′, 13′. Draw diagonals from these points to D, cutting A H, and the intersections will determine the apparent profile of the capital. From it, by means of visuals, the other two profiles on C F and B E may be found. The projection $a''\,c'$ must also be connected with the diagonals at m, n, o; from m draw a perpendicular to m', meeting the diagonals drawn from 9, 10, 12 (to D) and giving the profile 9″, 10″. Visuals drawn from these points will fix the profile on the perpendiculars n, n', o, o'. Finally, 13′ D will give the points $d'\,k'$, and by drawing the visuals the section will be terminated at l' and i', and the figure will be complete.

Plate XII.

In order to draw the apparent form of a circular body composed of several mouldings whose curves have their centre in the axis of that body, it is necessary to find the profiles of at least four sections superposed on the axis and diagonals of its plan. By this means we have the advantage of seeing the appearance of all its divisions from the eighth part to the entire body; and supposing, moreover, that it be composed of several masses united in a horizontal and vertical direction, we can also determine the trace of their connection as they would be parallel to the vertical profile, and horizontal to the visuals and diagonals. We therefore give a Tuscan capital, both to show how its apparent form may be found, and also that the mechanism used for obtaining the apparent form of any other body (subject to the same conditions and of a similar nature) may be understood. In this case, also, if the plate be reversed, the capital will be seen upside down, and it will thus be easily understood how to construct a base. With regard to the shape of bodies whose total or partial superficies are curved, the working naturally is somewhat complicated, and it is rendered more so by the complication of mouldings. It will suffice if we obtain a perfect result without any ground plan or elevation, and without the numerous other complications contained in other more splendid but less simple and less perfect works.

Working.—Mark on A B the horizontal dimensions or width of the shaft and the projections; and on A C, the vertical dimensions or heights. Carry the proportions of the projections of the curved mouldings 1, 2, 3, 4, from the centre a (half the total width of the body) to the geometrical diagonal, and by means of perpendiculars from these points of intersection the points distinguished by a small o below 5, 6, 7, 8 on A a will be obtained. From all these points draw lines towards the geometric G, cutting the visual A E. Having constructed the square A E F H (by means of the diagonal A D), draw the diagonal H E, and through the centre I draw the two axes L M, N P. Now draw lines through these points of intersection on A E, cutting the diagonals A F, E H, and from 1, 2, 3, 4, only to the axis L M, N P. Then from the point I draw the indefinite perpendicular I Q. On it, by means of the diagonal D, mark the heights d, e, f, g, h, i, k, l, and we shall have on the vertical axis all the points through which to draw the other horizontal axis parallel to M L, N P, and all the diagonals

from D. To find the other diagonals draw perpendiculars from H and E; and on them, by means of the vanishing points, carry the heights *d*, *e*, *f*, *g*, *h*, *i*, *k*, *l*; and *m* *n*, for example, will be the diagonal which will pass through the point *o*. This being done, the perspective of the vertical sections made on the diagonals A F, H E, and on the axis N P, L M, will easily be found by carrying all the diagonals and all the axes through the height of the axis I Q, and the required profile will be obtained at their meeting points with the perpendiculars drawn from the points indicated on A F, H E, N P, L M. Nothing now remains but to draw freehand curves through the points which are here strongly marked, and the apparent outline of the several mouldings is determined. As will be seen in the plate, only half the figure has been outlined, in order to allow the method of working to be clearly seen. Nothing has been said of the upper part or abacus, because the method of construction has already been given in a similar operation.

Plate XIII.

I have hitherto supposed and tried cases in which only one perspective angle is found, and when from the points obtained by that angle the apparent form of one or more objects can be found, their lines, however, being respectively parallel. But the case often occurs in which several objects are placed in as many different positions as there are points on the circumference of a semicircle (F, *f*, *e*, *d*, *c*, *b*, *a*, E). For if, for example, a square be held fixed at the angle A, it can, with the opposite point, describe a semicircle determining the various directions of its sides, which are equivalent to the directions which the sides of that square would take if the spectator turned round and the square remained immovable.

Therefore if, with one single perspective angle (finding the similar geometric), we obtain five points on the horizon—that is, two vanishing points, two geometrical points, and one diagonal point—we shall have to find these five points as many times (if required) as we have different positions of the perspective angle. The point of sight O is immovable, and will therefore always be the same; the distance will also be the same, however many differently placed angles there may be; but, as the apparent size of the angle determines the distance, the size of one only can be fixed, however many there may be, the others depending on it.

Working.—We will now find the points of several objects placed in various directions in one single picture.

In order not to complicate the lines in the present plate we will suppose the whole distance to be O A, so that the angles which have their vertex at A are geometrical right angles. The perspective angle P′ C P′ being placed as wished, fix the direction of the eye at O. On that point raise the indefinite perpendicular O A. Bisect equally P′ P′ at X. At the centre X and radius X P′ describe a circle, cutting the perpendicular O A at A. Join A P′, A P′ and the right angle P′ A P′ is a geometric right angle. From the centre A (with any radius) describe the semicircle F, *f*, *e*, *d*, *c*, *b*, *a*, E, having its diameter F E parallel to the horizon. Complete the square A, *d*, *g*, *a*, by adding the remaining sides *d g*, *a g* to the sides A *d*, A *a*. Draw the diagonal A *g*, and produce it to the horizon, meeting it in D′. At the centre P′ to the right, and the radius A (describe a circle), cutting the horizon at G′, and we shall have the points required for the construction of the cube at the angle C.

In fact, through C draw the horizontal C H and the perpendicular C I; on them mark the geometrical side of the cube. Join H G′, cutting C P′ in L, and we have C L, the apparent side of the cube. Draw the diagonal C D′, and we find the depth M; and these indications are sufficient for the construction of the cube on the diagonal C M. If another equal cube, differently placed, be required, the perspective direction of one only of its sides can be fixed. Let this be N P^2. Join P^2 A, and on the side A *b* construct the geometrical square, A *b h c*. Produce A *c* to meet the horizon, and we have the other vanishing point P^2 to the left. Draw the diagonal A *h* and produce it to meet the horizon in D^2. From the centre P^2 and radius P^2 A, find the geometrical point G^2. Through N draw N Q parallel to the horizon, and make N equal to C H. Join Q G^2, and complete the cube in the same way as the first.

Lastly, fix as desired the direction of the third cube, R P^3. Join P^3 A. On A *c* make the square A *c l f*; continue the process used for the cubes already constructed, and three cubes in perspective, of equal size, but placed in different positions, will be obtained.

A careful examination of the figure now constructed will confirm what has been already explained.

Plate XIV.

It will now be understood that all the visual rays or lines of the normal surface of objects concur at the two vanishing points; that the diagonal bisecting the apparent right angle formed by two visuals determines the other opposite angle, and consequently the square; that the two geometrical points have the property of foreshortening the geometrical dimensions on the horizontal plane; that all these points are derived from the apparent angle in relation to its position on the horizon, and with regard to the point of sight; and, finally, the method of finding these points having been explained, it seems to me that the exercises already given on the appli-

cation of these principles are sufficient to enable everyone to put in perspective any view he may desire.

Plate XIV. contains an interior with curved and straight lines, and anyone who understands it thoroughly will be able by this system to draw any subject, either from life, from fragments, or from his own imagination.

Working.—Having determined the height of the horizon, the point of sight, and the inclination of the perspective angle P A P′, find the diagonal D and the geometrical point G′. Through A draw an indefinite perpendicular A B and A *c* parallel to the horizon. On the perpendicular mark the heights A *d* (of the arch), *d e* (of the pilaster), and *e* 7 equal to A *a* (of the steps and block). On A *c* mark the breadths A *a* (of the pilaster), *a c* (of the arch), and *b* (centre of *a c*). Draw lines from *a*, *b*, *c* to the geometric G′, cutting A P at *a′*, *b′*, *c′*; through these points draw indefinite perpendiculars, *a f*, *b′ b″*, *c′ n*. From *d* draw the diagonal *d* D and the visuals to P P′, and the points *h b″ l* will be obtained. Now draw *h* P′, and the square *d*, *k*, *i*, *h* is found. Then from the point *l* draw the diagonal *l m*, and the other square formed on it will be obtained. Draw *l* P′, meeting *d* D in the point *p*, and through it we obtain the point *q*, repeating the diagonals we find *r* and so on. All the squares thus obtained will give at their angles the corners of the columns, and the springing of the arches and intersections.

Now with the radius *d* A describe a quadrant with its right angle at *d*; bisect the angle equally, cutting the circumference in *t*, and through the point *t* project a horizontal line *t s*. Draw the visual *s v*, and then the diagonal *c b″*, cutting *s v* in *u*. Through *u* draw *u x* (visual to P′) and the diagonal *x v*, and the square *x u v y* is found. Then draw all the perpendiculars to the corners of the squares of the columns, and the other squares will easily be constructed equal to *x u v y*, having one angle *v* common to each. Produce upwards the perpendiculars from the corners of the columns, and on them carry the height of A *d*. Draw the axis *b′* P′ and the diagonal *c′ z*, and at *z* we have the point of intersection of the curves of the diagonal arches; at the angle *x* the point through which (in this and in all the corresponding points) the curves of the diagonal arches pass; and in the remaining points *l y* and *l u b′* the point through which the curves of the arches pass. The process has only to be continued in order to find all the necessary points. The rest is self-evident. To construct the steps (allowing for their breadth to be double the height) from the point 7, draw the diagonals twice to find the point *g*, draw *g f*, and draw *o n* as marked; then for each separate height, 1, 2, 3, 4, 5, 6, 7 draw lines from these points to P, cutting *f* 7 at 1′, 2′, 3′, 4′, 5′, 6′, 7′, through which points draw lines to P′, producing them to *g f*, and draw perpendiculars from the points of intersection on *g f* to find the outline of the steps. It is only necessary to draw visuals through the points of the salient and inner angles to *o*, *n*, where the outline is drawn again to complete the flight of steps.

Finally, I consider that the instructions given are sufficient for successfully completing the work.

Plate XV.

Let us now try to draw in perspective a pedestal designed to form part of a small monument. Determine the apparent inclination of the right angle A B C, the height of the horizon D E, and the point of sight O. Produce A B, and B C to the horizon to find the two vanishing points. The geometric point G, and the diagonal point D, will be obtained by the usual process.

On the point B raise the indefinite perpendicular B F, and draw B H parallel to the horizon. On B H mark the widths and projections of the separate modules of that part of the pedestal situated below the horizon, and on the vertical mark the several heights. From the last of these, F, draw F R parallel to the horizon, and on it mark the projections which are situated above the horizon. This division will facilitate the work of drawing clearly the different projections. On B C, by means of lines drawn from the point G, mark the foreshortened dimensions given geometrically on B H. Draw the diagonal B D, and, having completed the square, the remaining diagonal X Z. Draw lines from these points on B C to the vanishing points, thus marking these dimensions on the diagonals. Perpendiculars drawn from these points on the diagonals will give the different projections where they meet the different heights brought to the point D. Now, in order to find the brackets fix the point I anywhere on the lower part of the perpendicular F B I, draw I L parallel to the horizon. Join I D, cutting B C at K; and from the corner of the shaft where the brackets are fixed draw the perpendiculars, cutting I K at P. Draw the visual P N, P Q. Produce Q P to *a*, join G *a*, and produce G *a* to meet I L at *b*. I *b* will be the space occupied by the projections. Set off on I L the geometrical measurements of the brackets from *b* to *c*. By means of lines drawn to G from these points mark the dimensions on the visual I M, and thence, by lines drawn from the vanishing point, on P N and on the diagonal P K. By the means of the other vanishing point, bring these dimensions to P Q. All the corners marked with black dots indicate the different projections of the brackets by means of vertical lines *from* them. The projections marked on the parallel F R must be brought, by means of the geometric point, to the visual F S, and thence to the diagonal F T. By means of the vanishing points these dimen-

sions may be brought to the other diagonal V U, and vertical lines drawn through these points will indicate the remaining projections below.

Plate XVI.

In the Etruscan necropolis of Cære (Cervetri), the Agylla of the Pelasgians, is a tomb known as the tomb of the Pilasters, which may give us the idea of the Etruscan houses and temples. Its pilasters are most original in form, and the whole interior, in its archaic simplicity, contains the real germ of perfect beauty. A drawing of the internal structure can easily be made from the measurements (which were taken under difficulties, the floor of the tomb being covered with water and mud). I omit the sepulchral couches and other accessories so as not to make the work too complicated in our case.

Working.—Fix the horizon G P, the inclination of the angle A B C, and the point of sight O. The other points on the horizon to be found as before. From the point B draw B E parallel to the horizon and the vertical B F indefinite. On B E mark the several horizontal dimensions, and on B F the vertical dimensions; all these dimensions coinciding with the scale X. Having marked the several projections of the pilasters on B H, carry them, by means of the geometric point G, on to the visual B I. Draw the diagonal B D, and from the points of coincidence bring these dimensions to the diagonal and the other cross line, and we then have all the projections marked on the diagonals. Direct the several heights to the diagonal point D. At this point of coincidence with the verticals raised from these projections, and by means of the visuals, the whole construction is found. For the other pilasters, produce the visuals from the first, and draw the diagonals M N, L Z. The dimensions of the lower part of the tomb, marked by a small *o* on B E, are carried by means of the point G′ to the visual B C, and thence to M R. The rest of the working by means of the construction lines is easily understood.

To draw the double pent roof bring the dimensions 1, 2, 3, 4, 5, 6 on to the diagonal as 1′, 2′, 3′, 4′, 5′, 6′, and cross it by the visuals directed to P′. From 6′ draw the parallel V *y*, and on it mark the geometrical widths of the roof 7, 8, 9, 10, 11, 12, 13, 14, 15. By means of the point G bring these dimensions to the visual U 6′. Thus 7 will give 7′, the latter will give 7″ and 7‴. Then 7″ will give T, and so on. Finally, 5′ and 6′ will give 5″ and 6″, and the latter will give 5‴ and 6‴. The width of the central beam is geometrically indicated on B E as *a b*. This is carried to *a′ b′*, and thence to *a″ b″*, and raised from the last to *a‴ b‴*.

A careful examination of this figure will show the ease and rapidity with which perspective may be drawn with mathematical exactness.

As far back as 1879, when studying the properties of similar triangles which I found while drawing lines on a photograph of an architectural subject (see Plates II. and XVII.), I observed that by a very simple operation the proportional vertical and horizontal measurements of an object, equivalent to its plan and geometrical elevation, could be obtained from a photograph.

By reversing this process, that is, from the geometrical dimensions only, whether ideal, deduced, or actual, a perfect and universal rule of perspective is obtained.

Plate XVII.

If we take a photograph of an architectural subject, such as the present, and draw the visual rays G A, A B, H I, and E F, producing them till they meet in P P′, we obtain at these points the two vanishing points, and the line of the horizon passing through them. Having fixed at O the centre of vision, which in a photograph is always at the centre of the focus (though in the present instance it will be found more to the left, because the photograph has been cut away on this side), and by the usual process, at Q we find the two geometric points G G′ and the diagonal point D.

Now if, for example, we draw through the angle of the plinth R a parallel to the horizon, and a vertical line through the same point R, we can on this horizontal line obtain the proportional geometrical horizontal dimensions, and on the vertical line corresponding geometrical vertical dimensions. Starting from the geometrical point G′, draw lines through the corners of the plinths at 1, 2, 3, and, starting from the other geometrical point G, draw lines through the other corners at 4, 5, 6, and it will be seen that the geometrical dimension R–1 is equal to 2–3, and R–4 is equal to 5–6. So the space between the columns 1 and 2 is equal to that between 4 and 5. The vertical dimensions are obtained by drawing perspective rays from the diagonal point D to the vertical R–7.

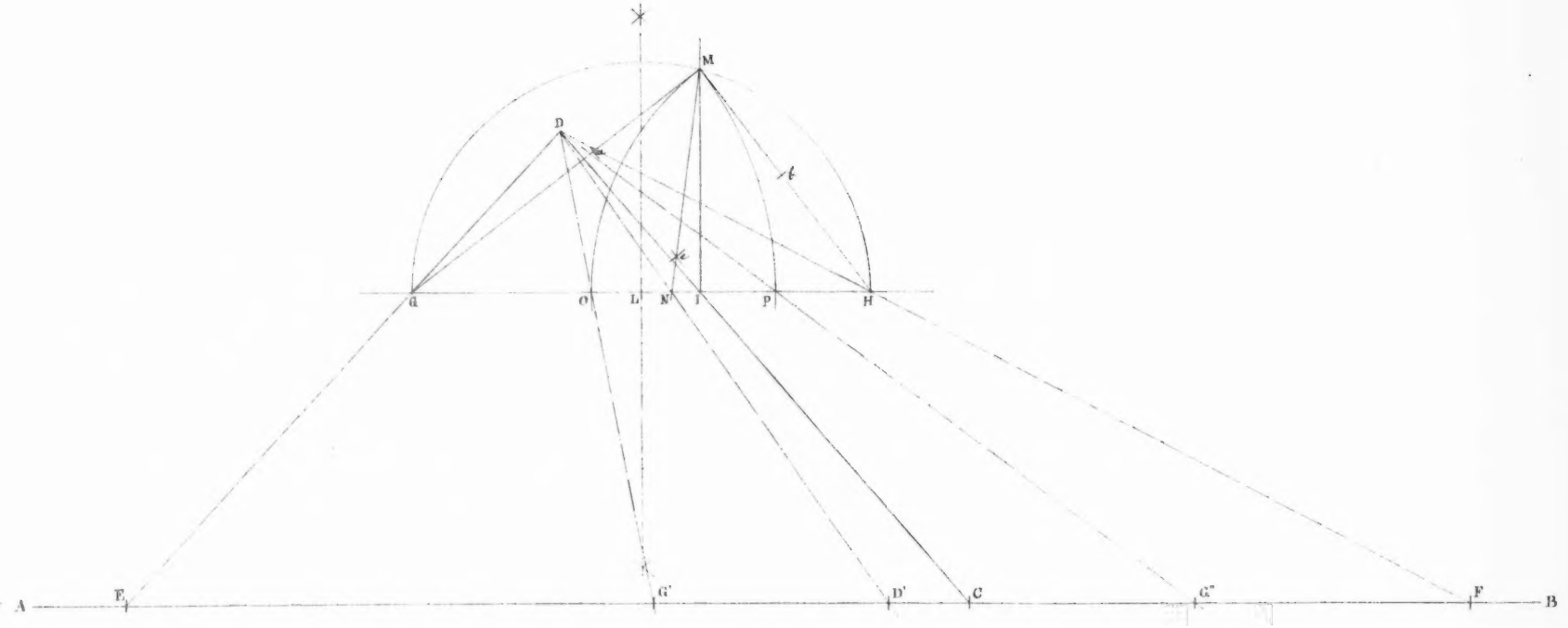
Thus, for example, the height of the zoccolo 7–8 is marked geometrically at 7′, 8′, as 8′–9 is the height of the pedestal, and 9–10 is the height of the column including the plinth and capital. If a line be drawn from the angle of the architrave A to the diagonal point D, it will pass exactly through the angle of the other architrave at S. Every other part of the photograph, if taken from a perfectly constructed building, is in every way subject to this rule.

It is therefore evident how all geometrical dimensions of height and breadth can be found from a photograph of a suitable size, which is equivalent to obtaining the plan and geometrical elevation. By the reverse operation, that is,

having the geometrical dimensions, whether ideal, deduced, or actual, we have the last and perfect universal system of perspective as herein set forth.

As a final proof: From the centre of vision O, let an indefinite perpendicular O U be drawn. Let the horizontal line P P′ be intersected at T, then from the centre T with radius T P let the arc P U cut O U at U and draw the geometric right angle P U P′. Then with the centre P and radius P U we find the geometric point G′. In the same way, from the centre P′ and with the radius P′ U we find the other geometric point G, and the vertical O U is the geometric distance. This last process is, however, already well known.

A thorough geometrical scholar will see by an examination of this plate that the whole process is derived from the properties of similar triangles, as shown in Plate II., and the art of drawing derives immense benefit from this positive science.



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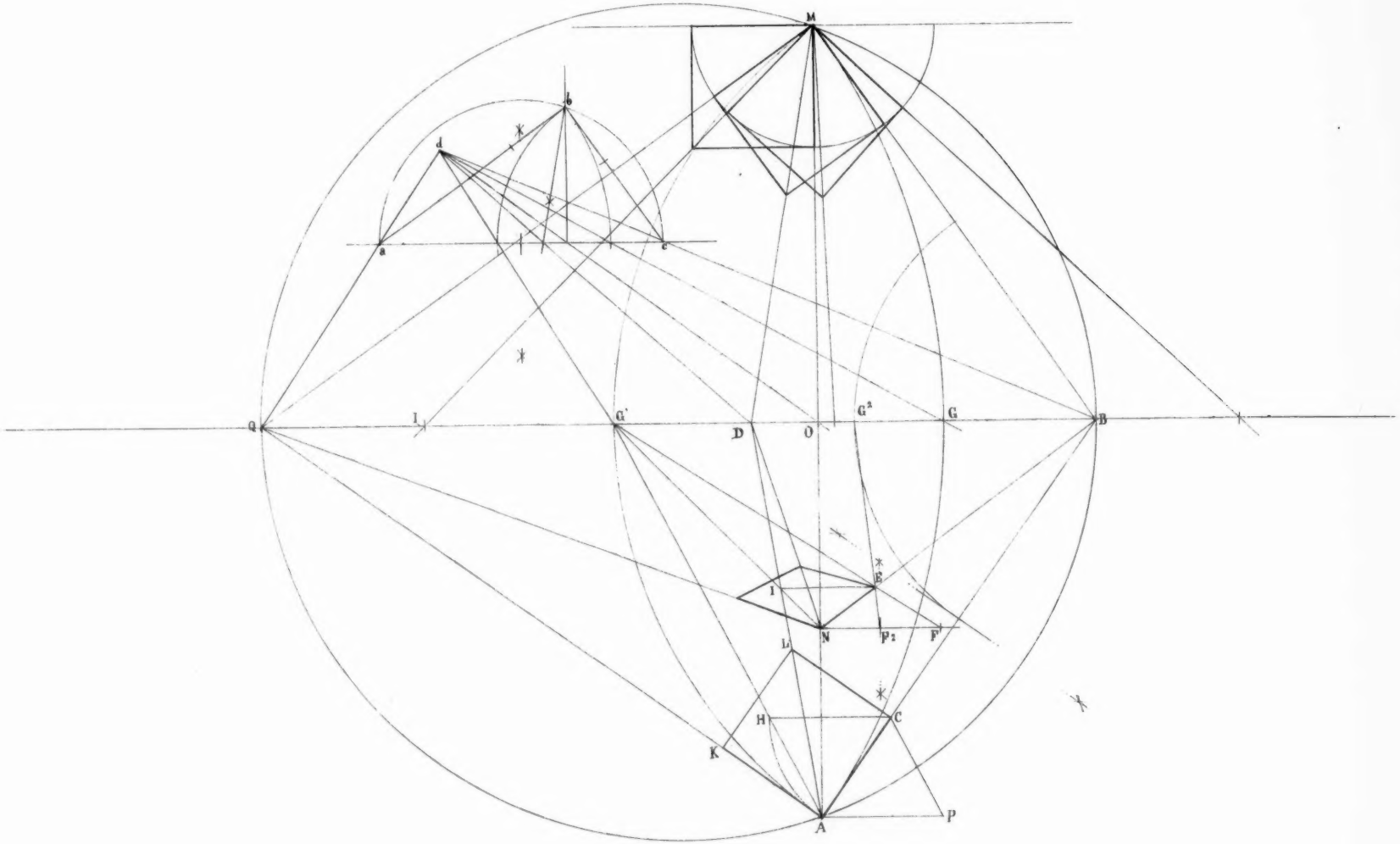

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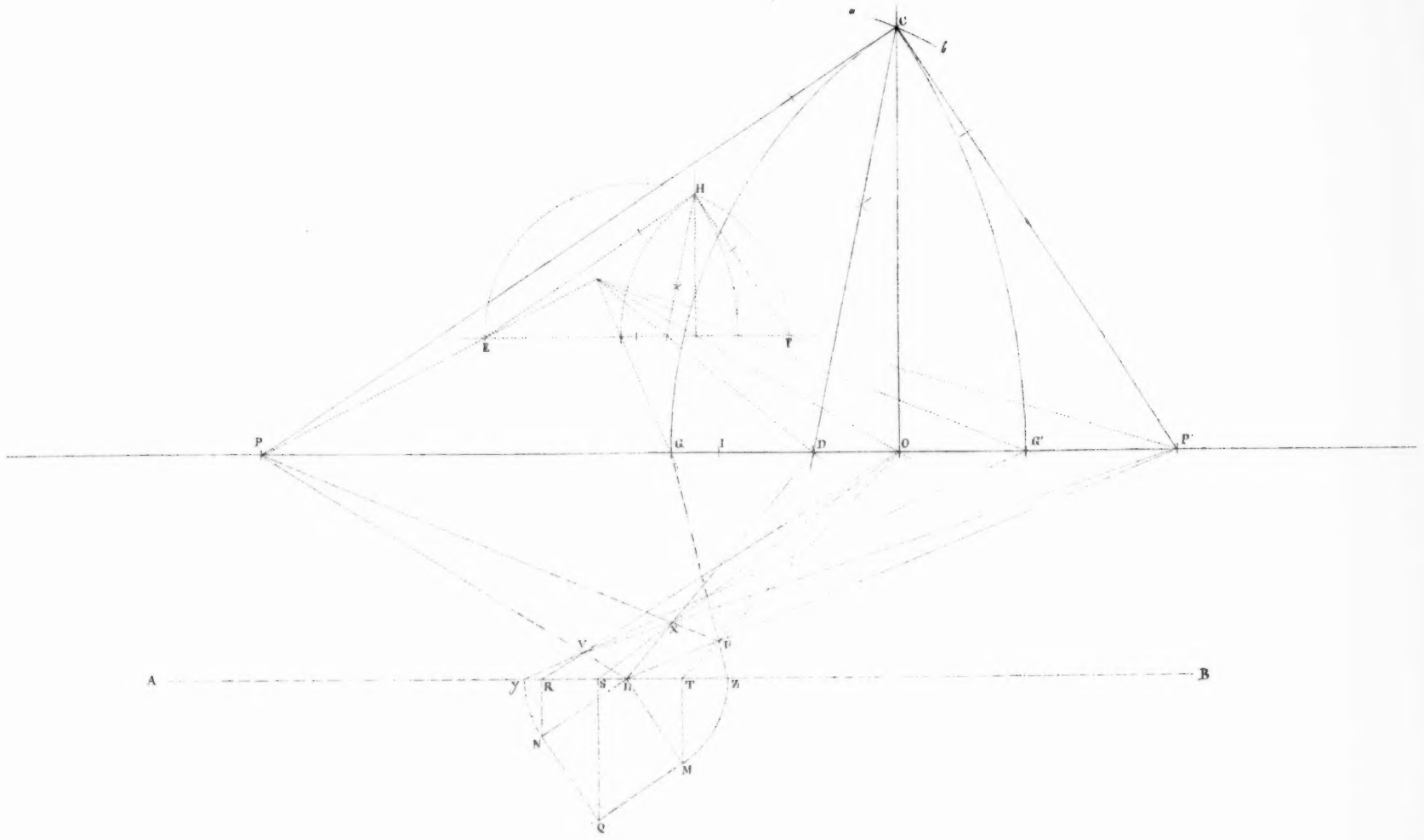

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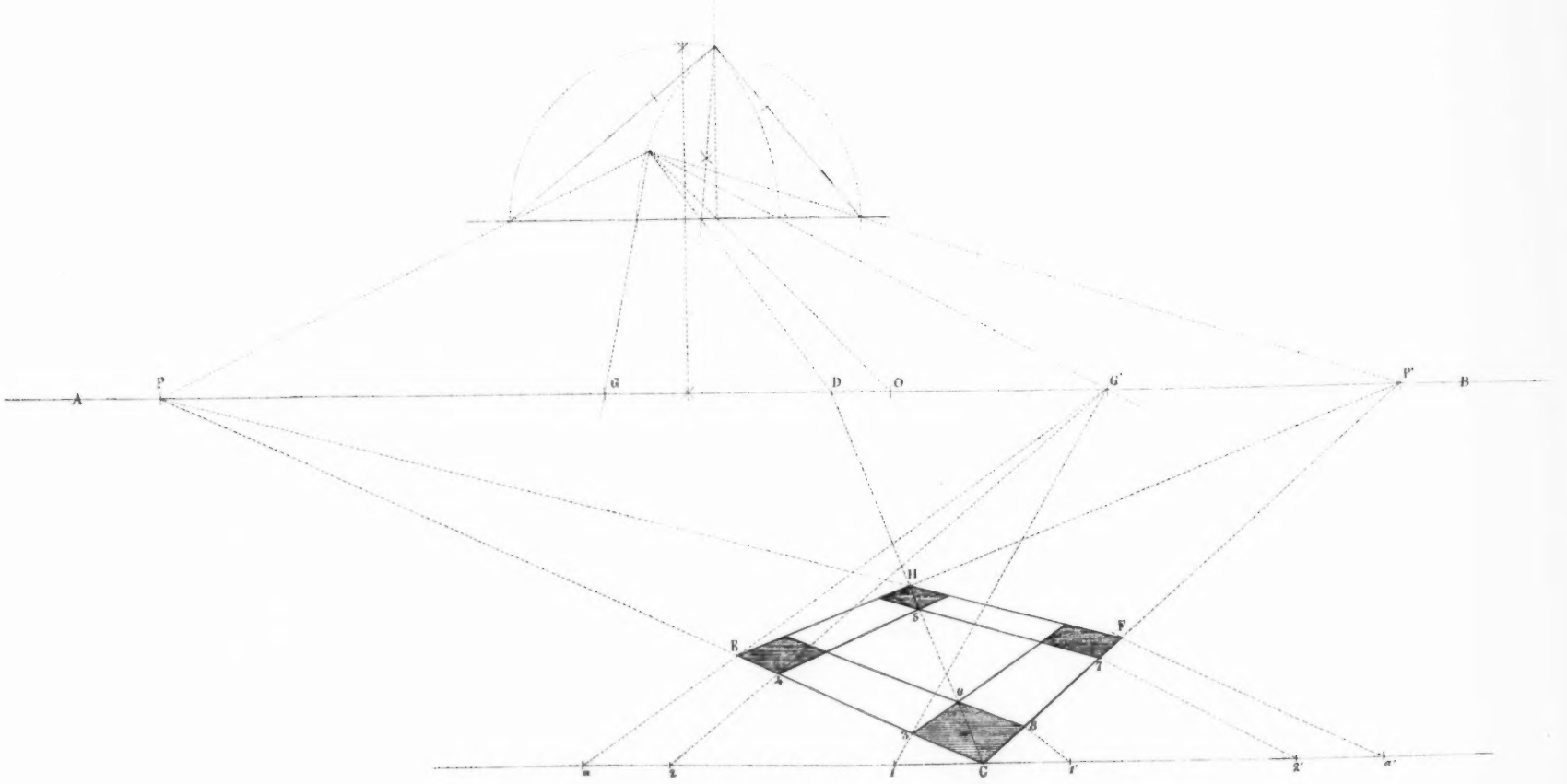

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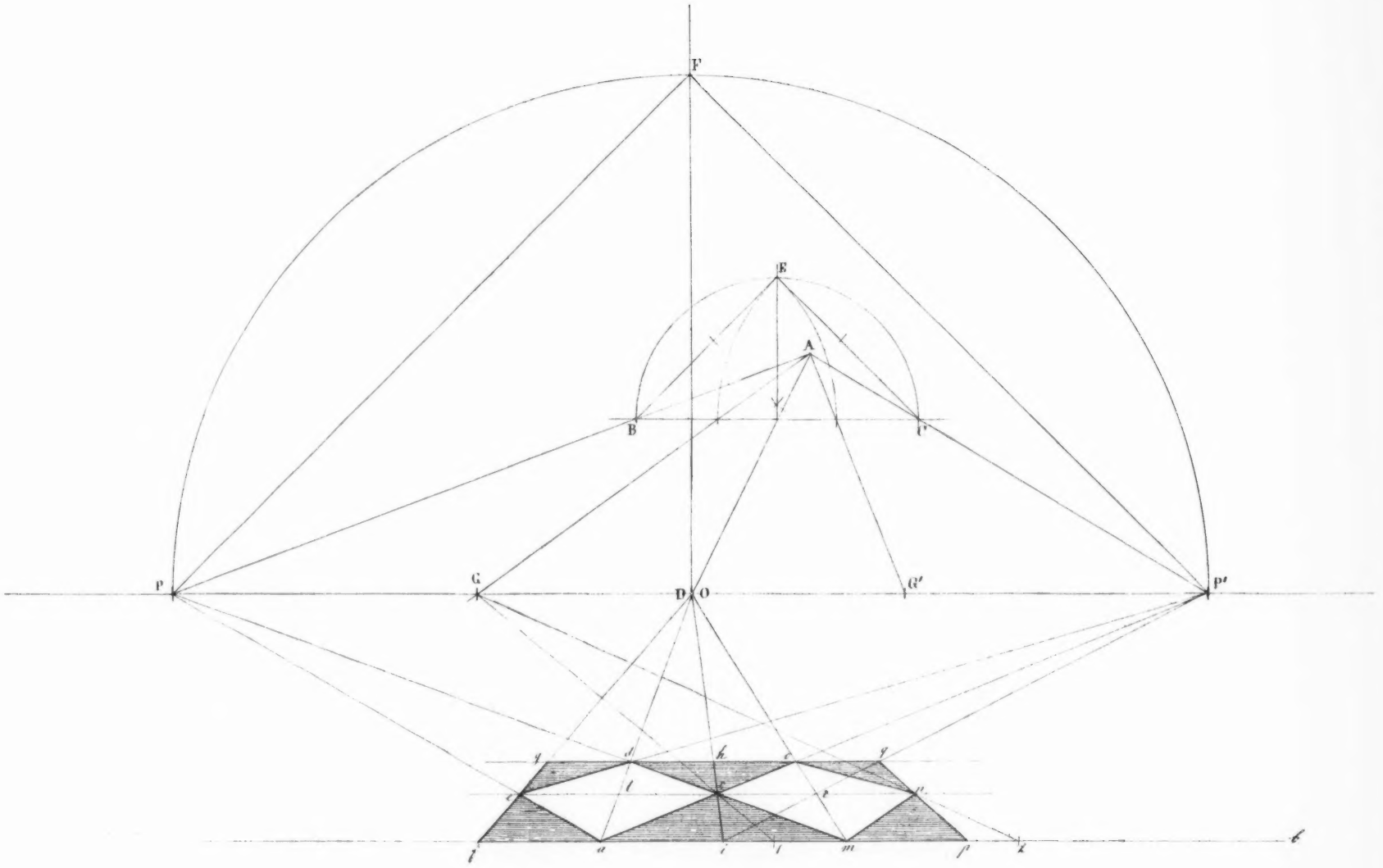

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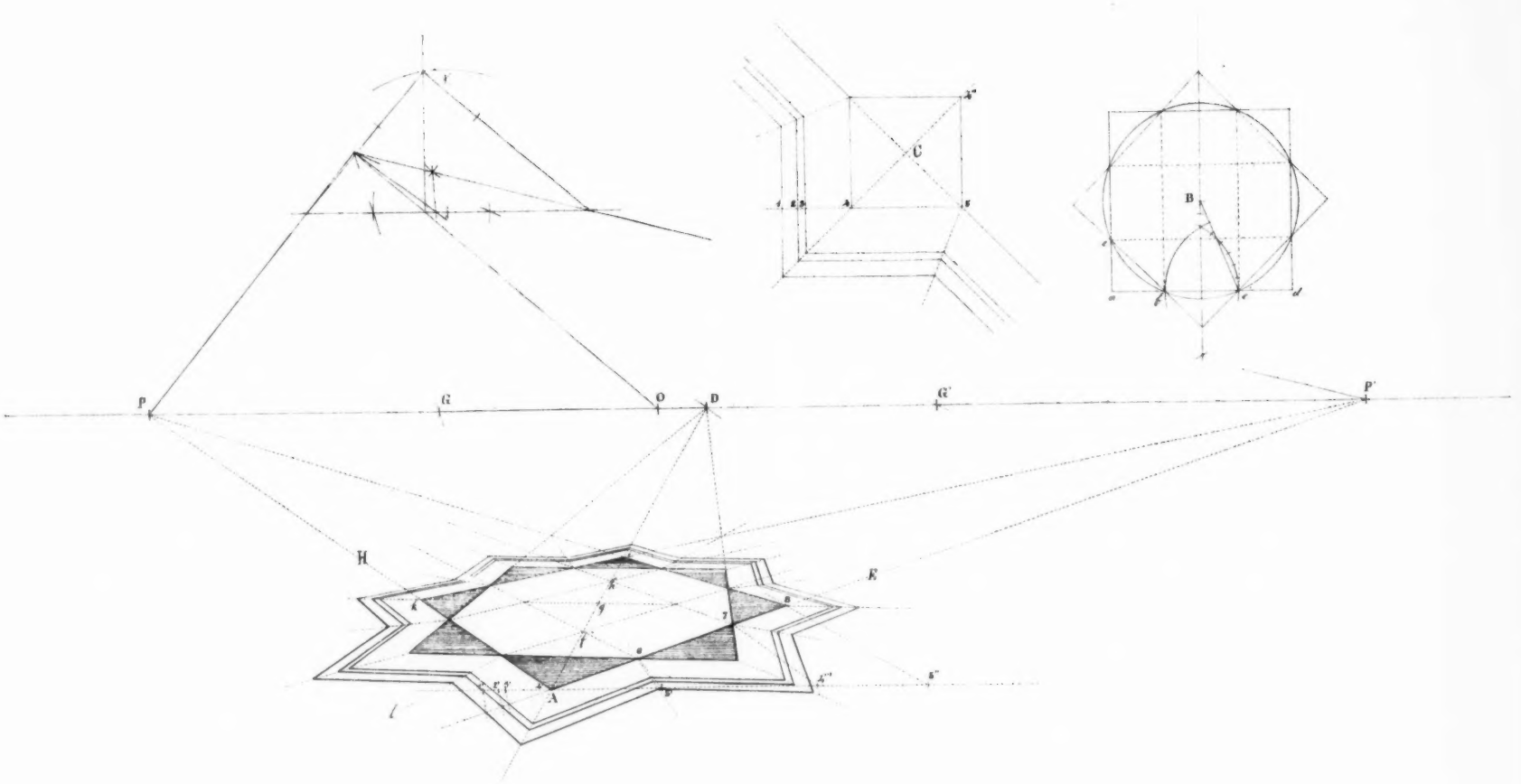

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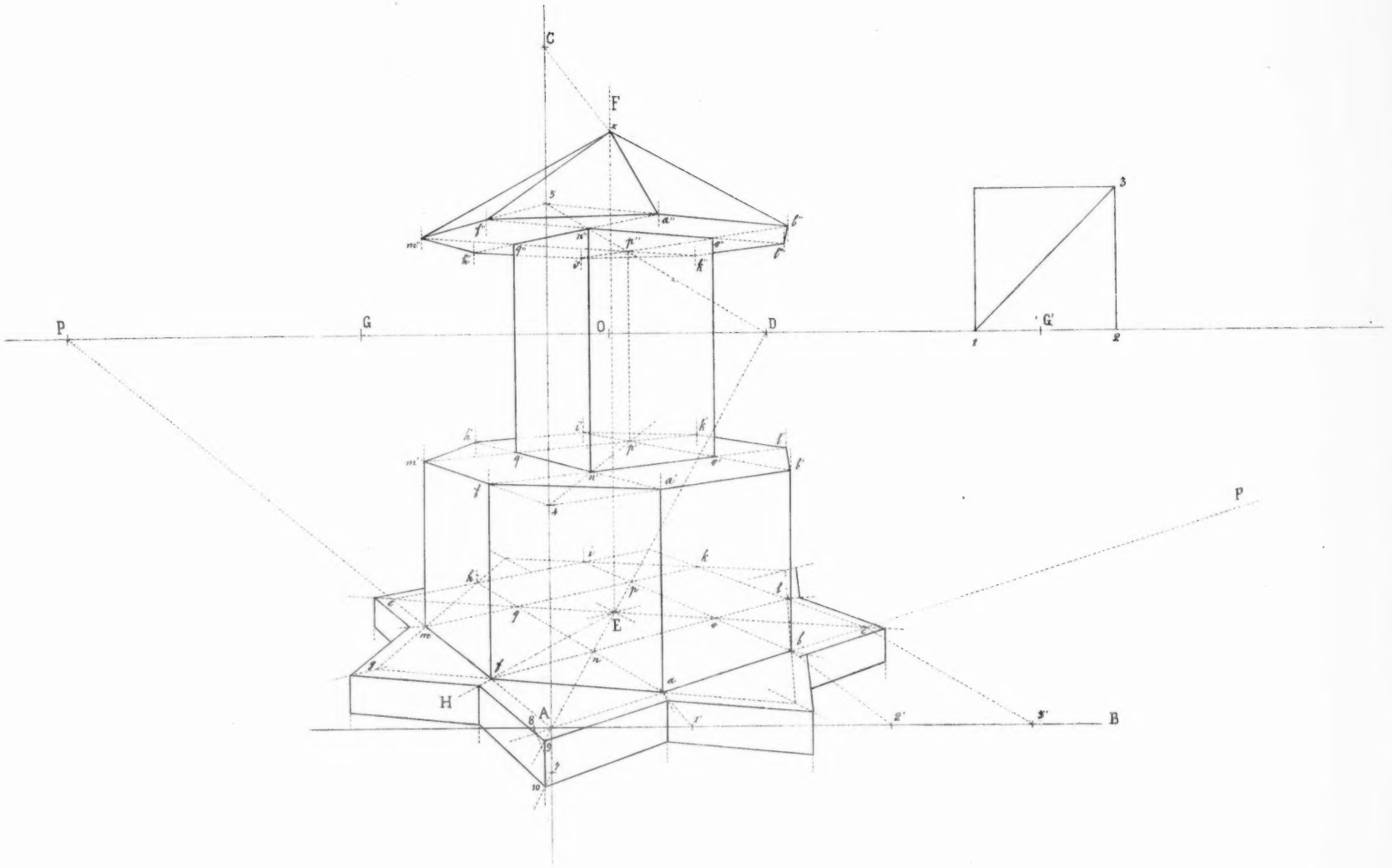

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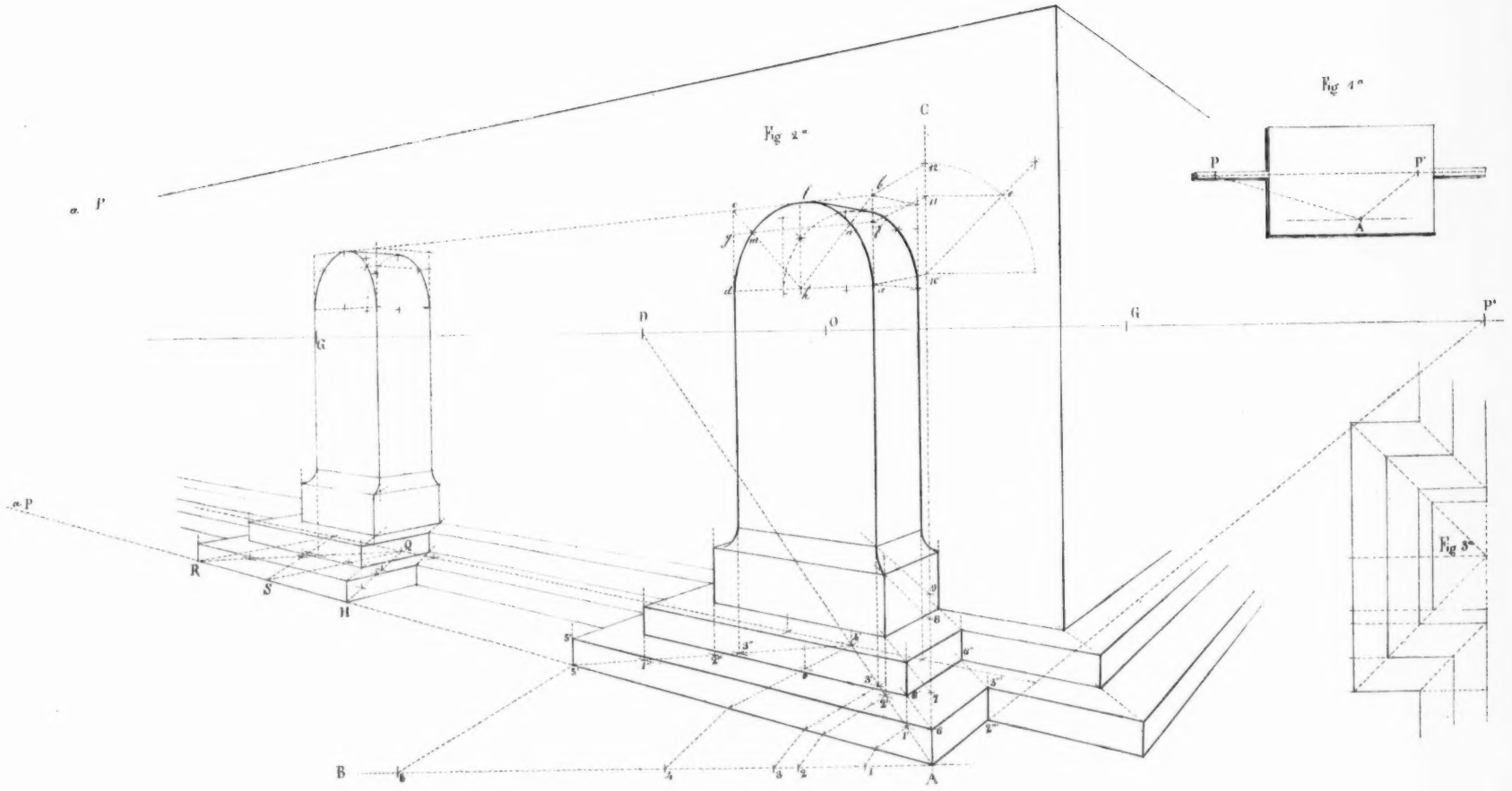

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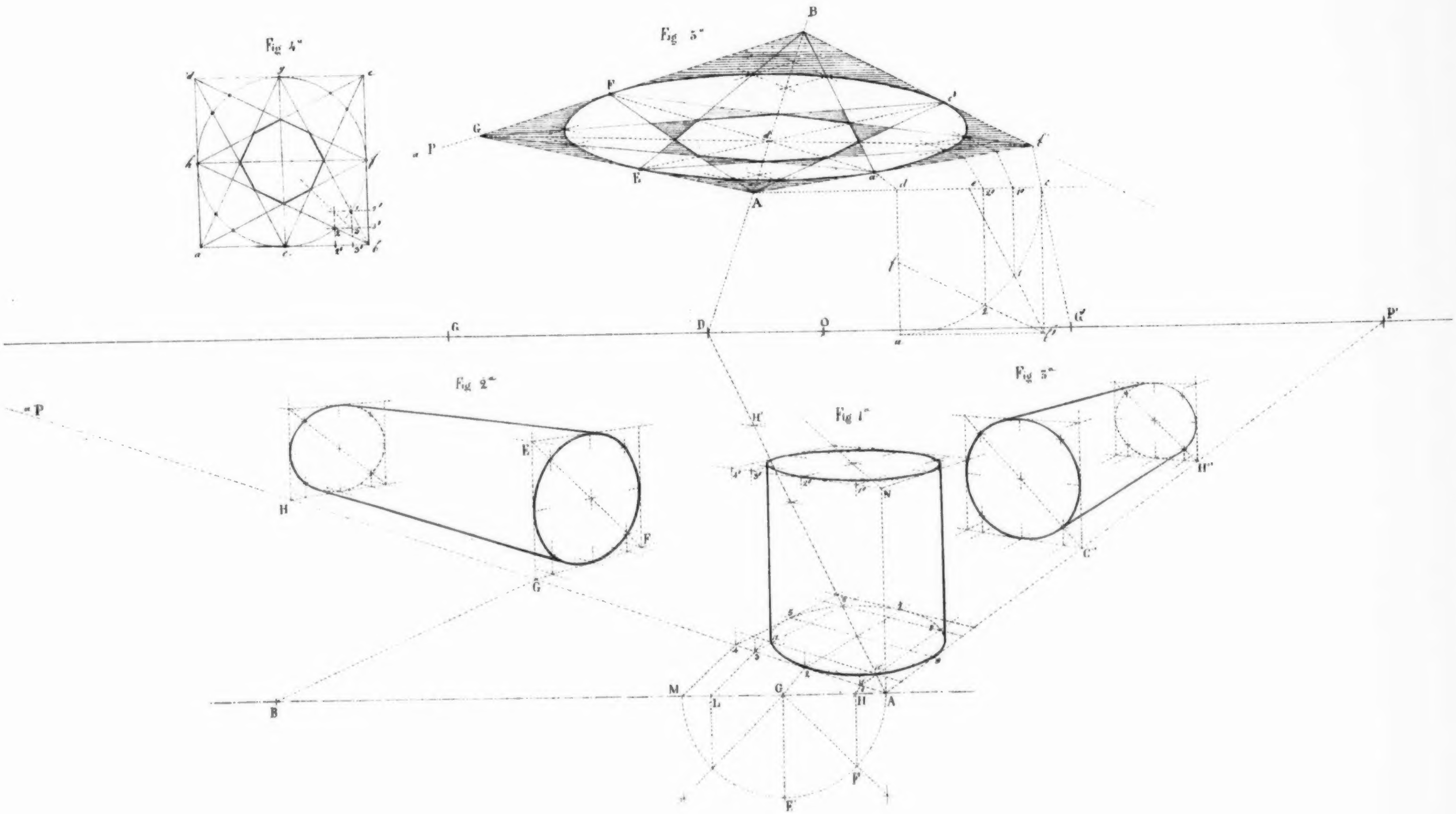
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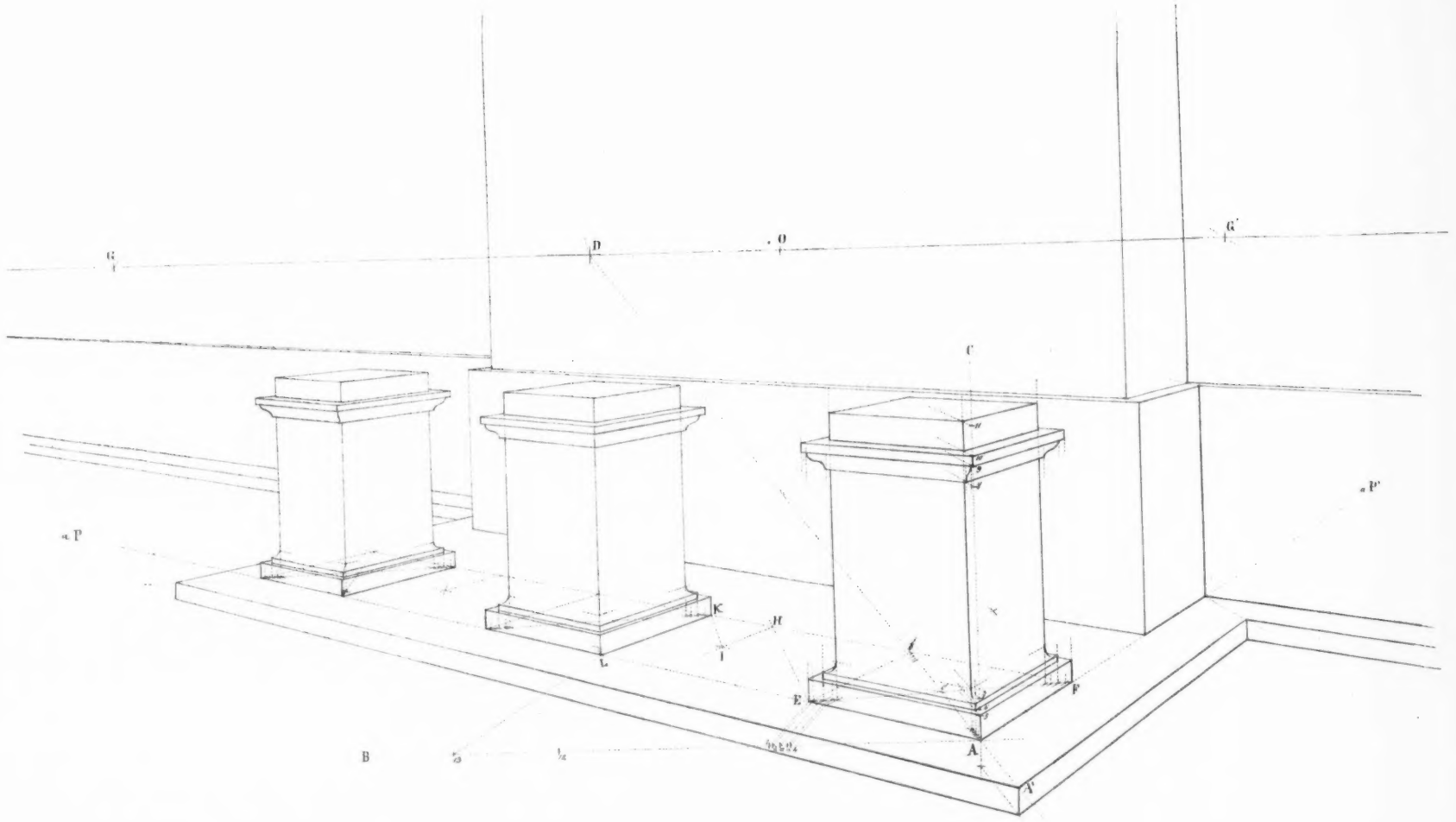

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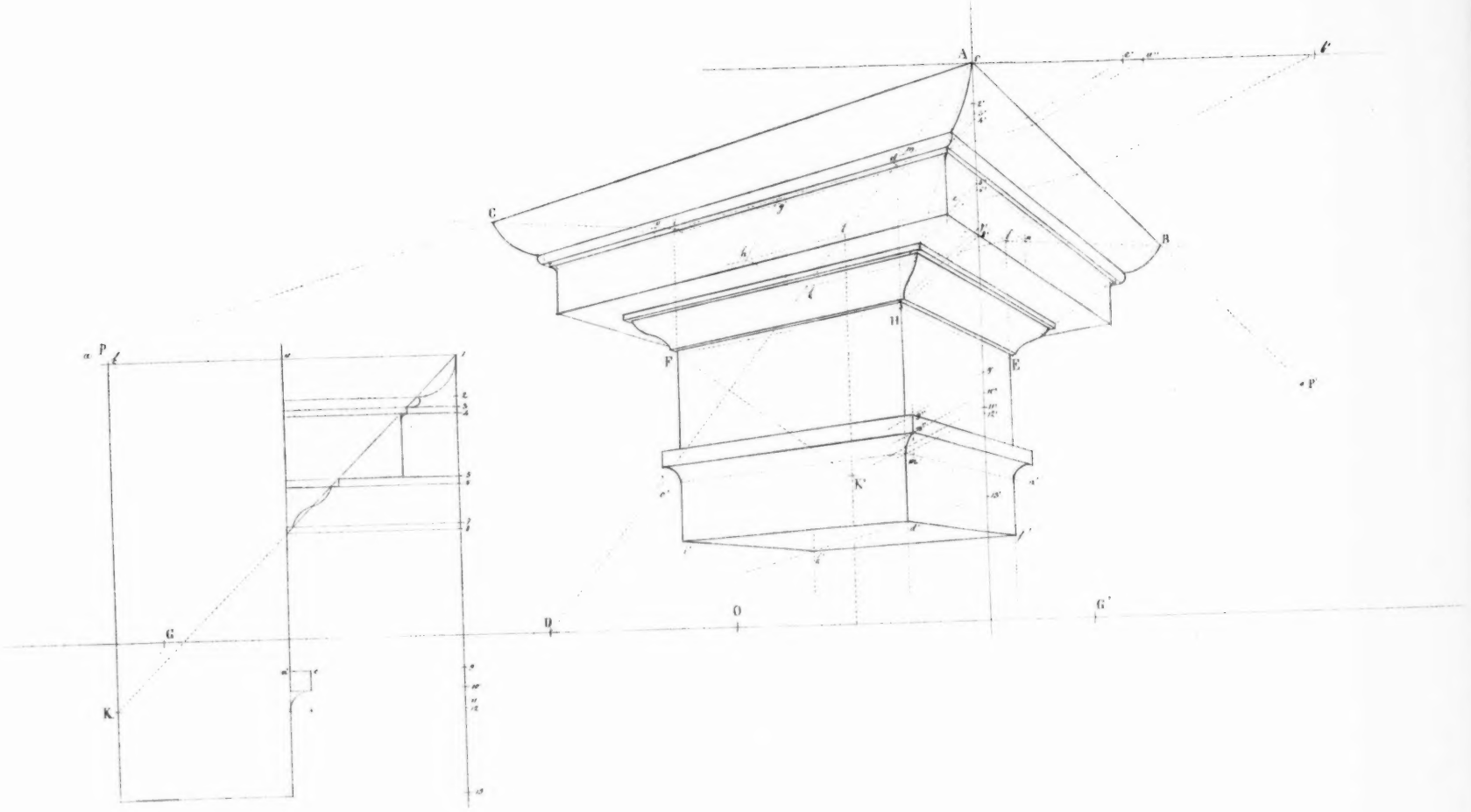

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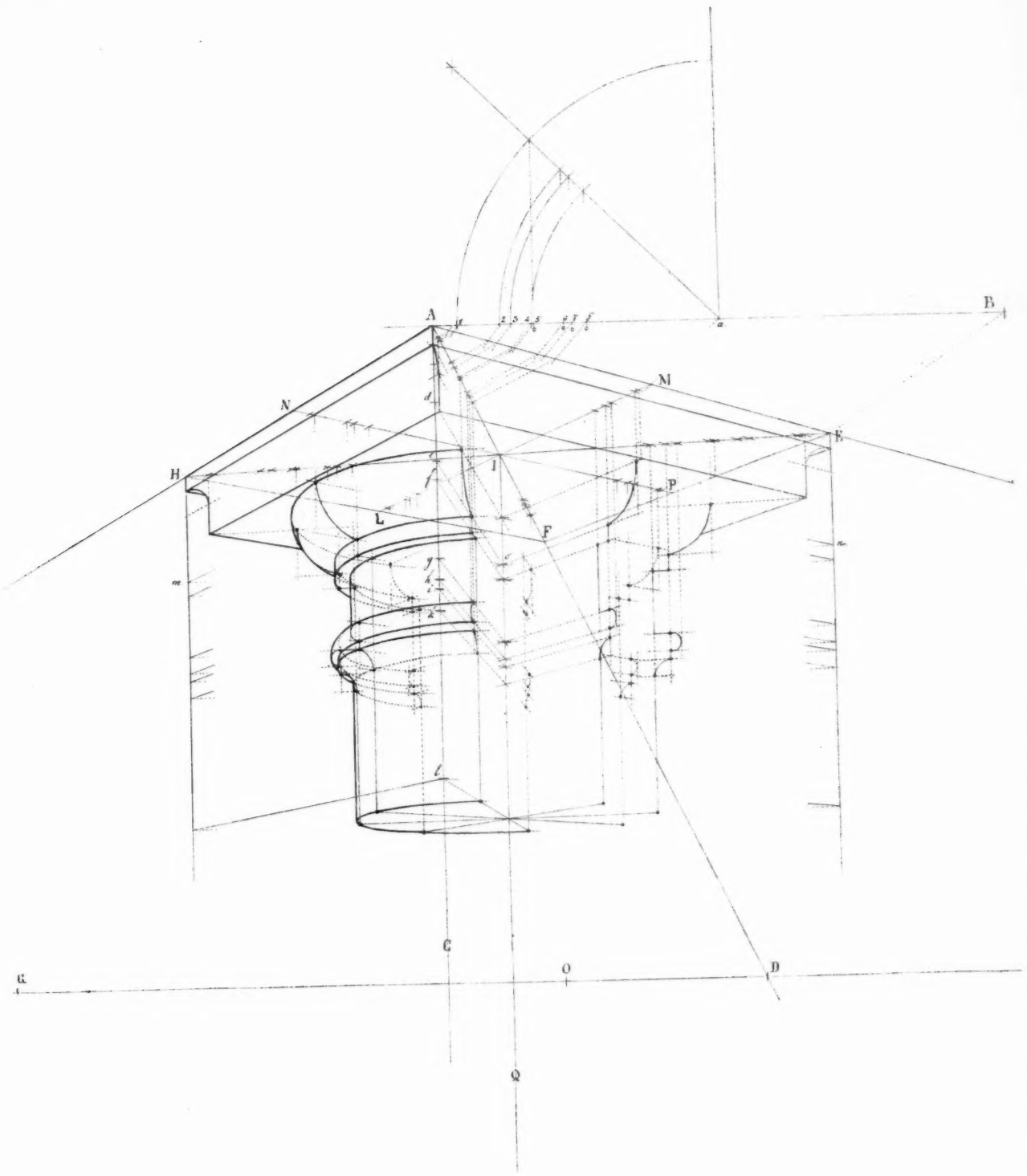
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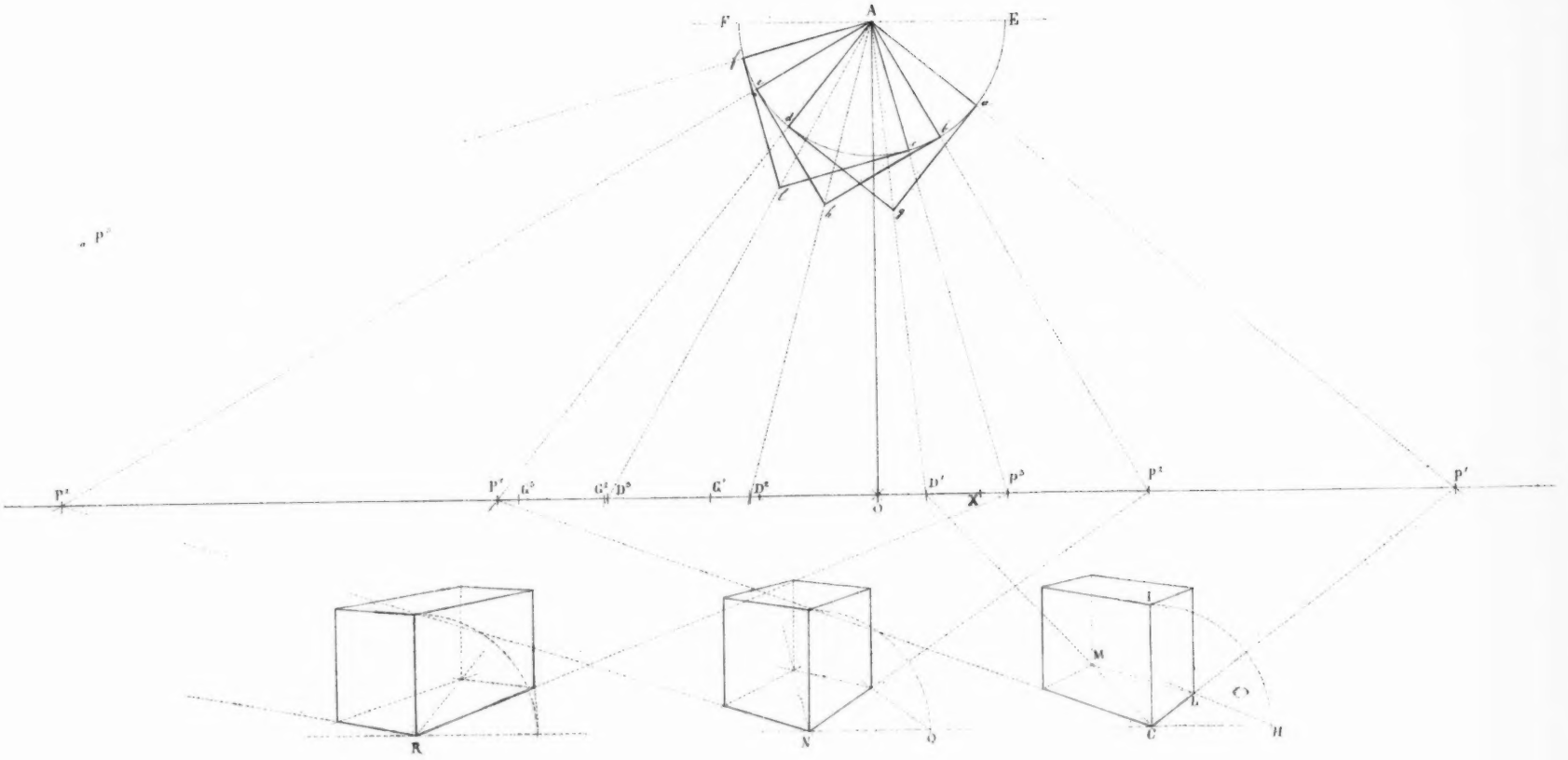

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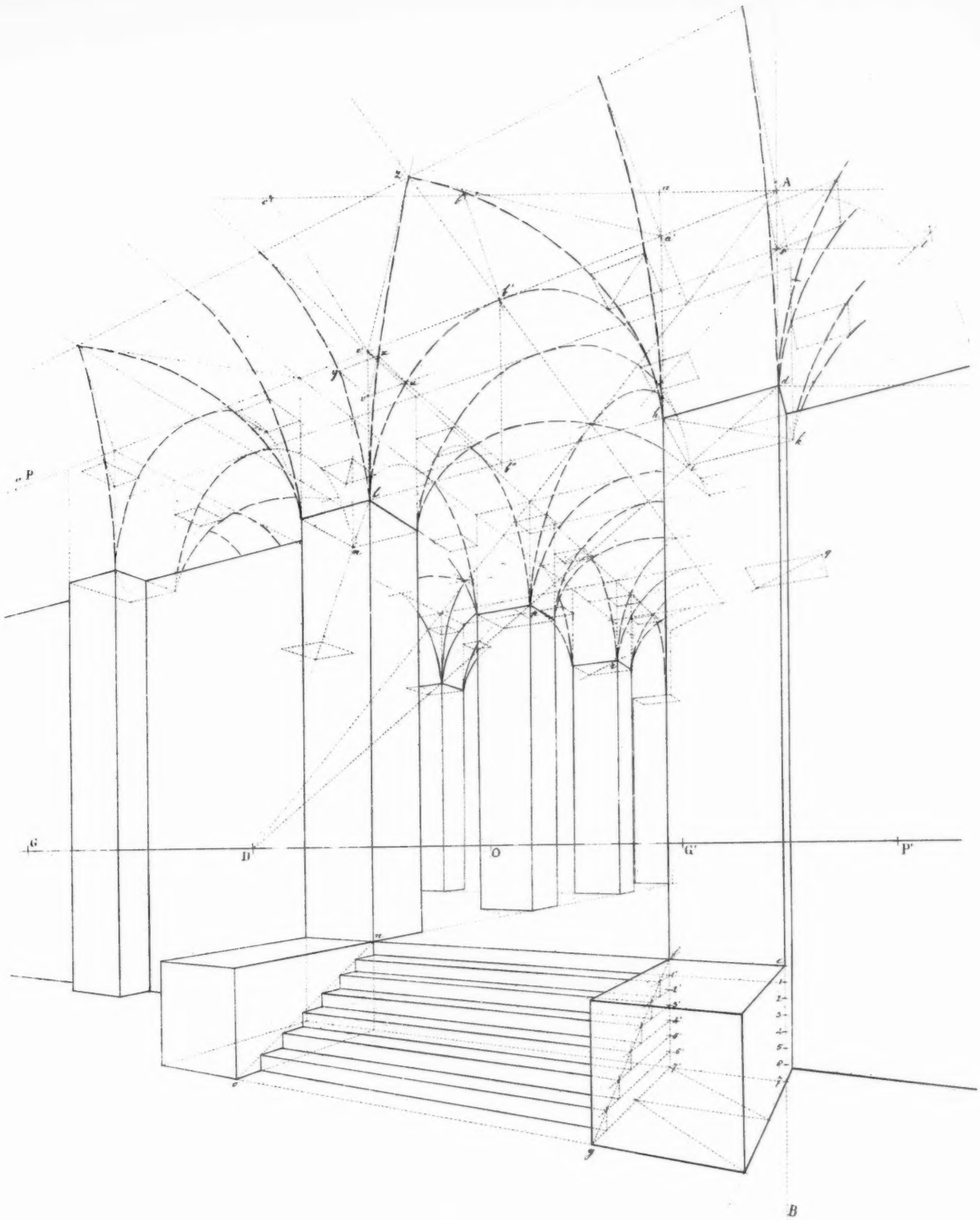

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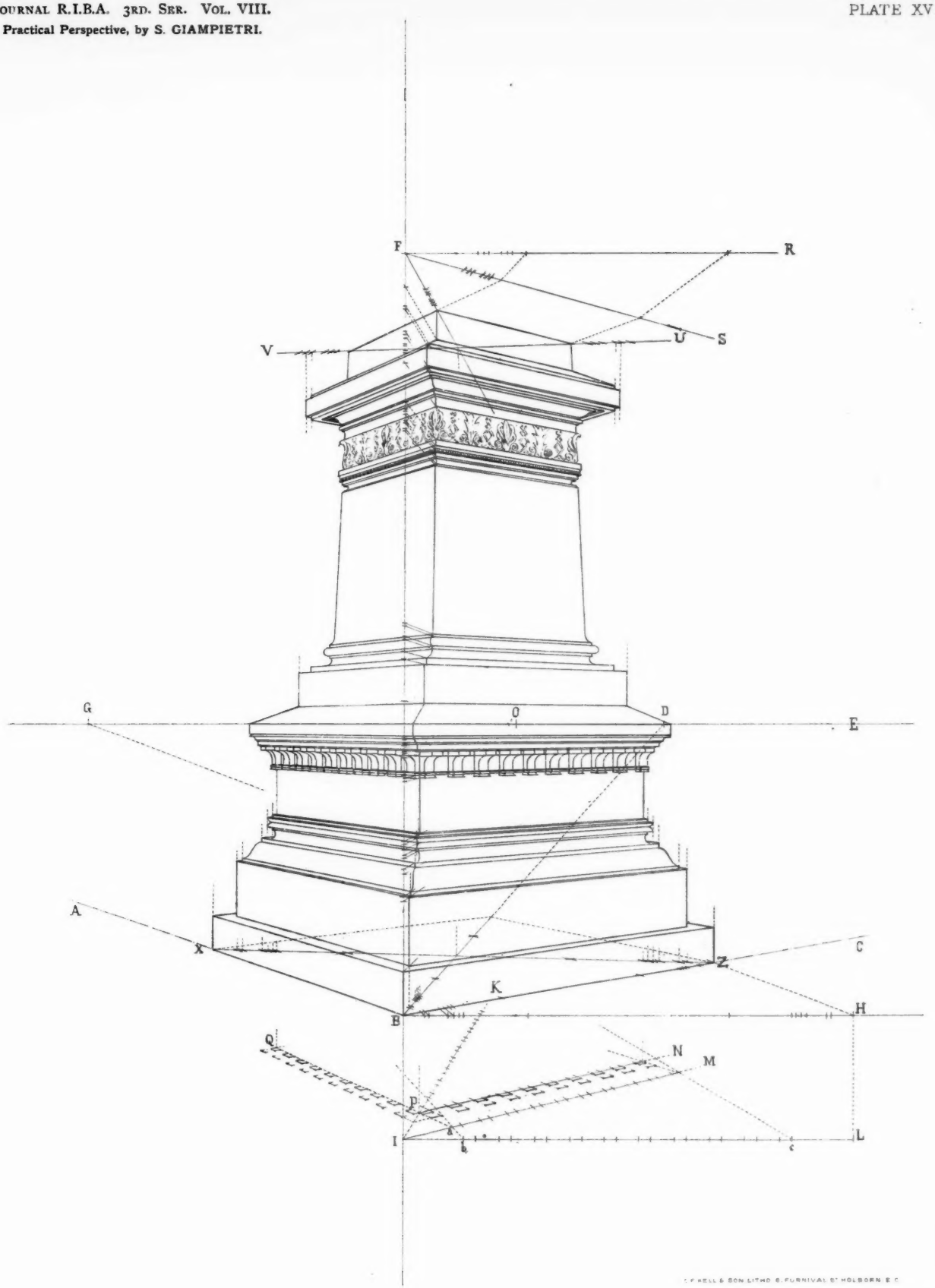

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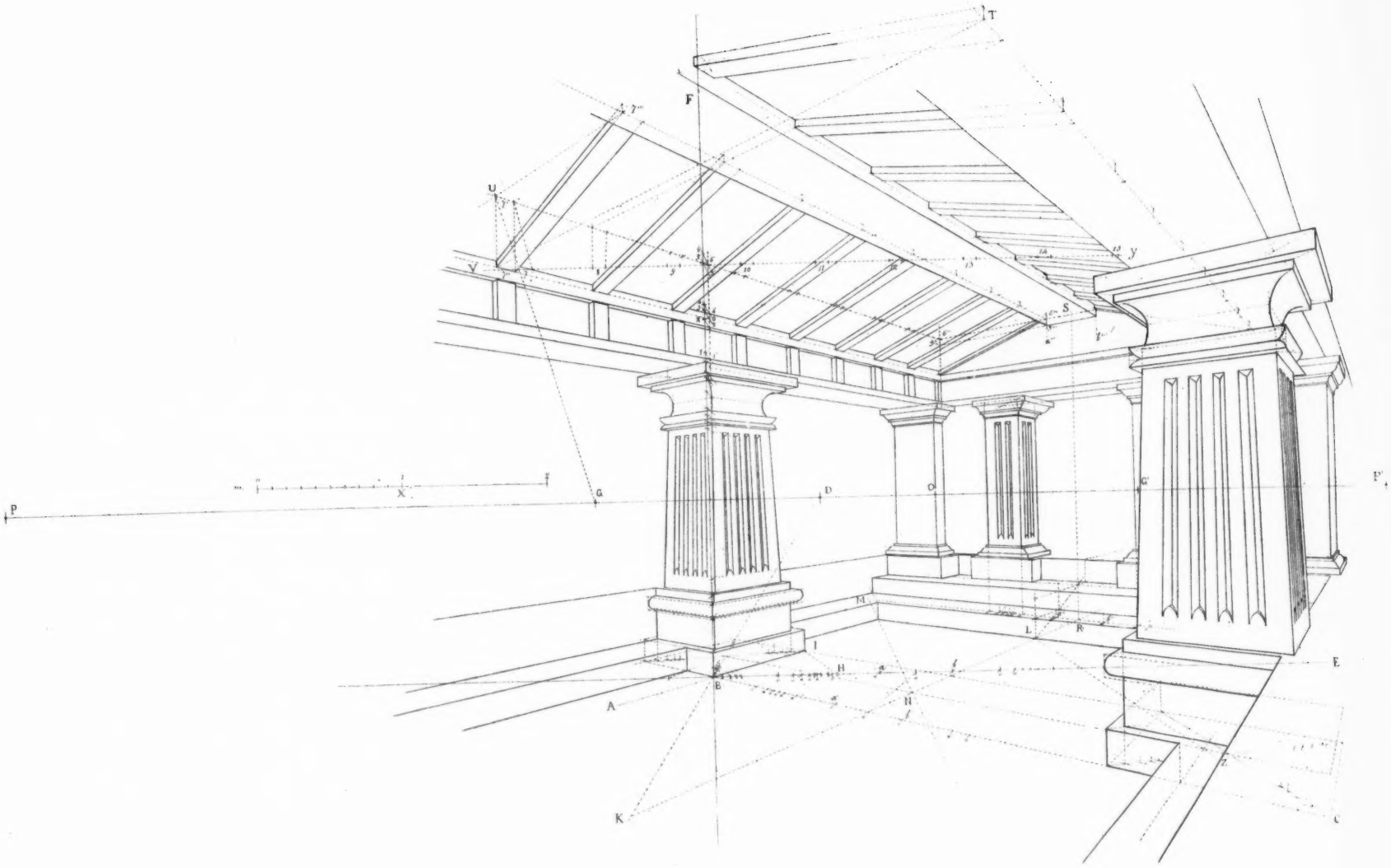

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PLATE XVII

TAVOLA XVII

PLANCHE XVII